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Foreman Training an Aid to Industry

Great Opportunities Are Available Through Co-operation of State Boards of Education

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ONE of the most effective methods of improving the status of the workers in industries, is through the so-called foremanship training conferences, a type of vocational education. Some of the most direct results of these conferences or classes are the elimination of waste, keeping down cost, a higher type of industrial leadership, accident prevention, better methods of instructing workers in their jobs, the correct giving of orders, promoting of co-operation, keeping the workers interested in their jobs, and a general stimulation toward good morale. The accomplishment of this will help promote the prosperity of the company as well as the worker.

To cite some experiences and the results after conducting foremanship conferences with the same groups for several years, we find that the foremen have unconsciously created a desire upon the part of the workers for more training and education regarding their jobs. This past year we have enrolled in educational classes 697 out of a total of 1,350 employees. Just think, over 50 per cent of the workers going to school.

The way this came about was that the foremen while attending the foremanship conferences insisted upon calling it "going to school." They carried back to their men the cases or problems and parts of the discussions in which they had taken part, and would thrash them all over again with their men. This interested the workers in their foreman's problems. It also kindled the spark of ambition in some of the workers.

As the foremanship conferences continued, the foremen realized their lack of knowledge and training in the various subjects related to their jobs. They often came and spoke about taking up certain lines of study. It was also natural for them to speak of their desires to their workers, and resulted in the workers wanting to do the same.

The first year five classes were organized, consisting of shop arithmetic, blue print reading, electricity, papermaking and carpentry. The second year, sheet metal drawing, machine shop practice, steam plant practice, paper chemistry, soda and sulphate practice were added to the above list as there was a demand for instruction in these subjects by the employees. The past year, the following classes were conducted, some of which we divided into two or more groups as follows:

SCHEDULE OF EDUCATIONAL CLASSES
1928-1929
Champion Fibre Company

CLASS	PLACE	DAYS AND TIME		
Accounting	Room No. 1	Mon., Wed., and Fri.	7:30 P.M.	2 Groups
Arithmetic	" " 1 and 3	Tues., and Thurs.	7:00 P.M.	2 "
Blue Print Reading	" " 1	Mon., and Wed.	5:15 P.M.	1 "
Cylinder Machine Operation	" " 3	Tues., and Fri.	3:15 P.M.	3 "
Electrolytic Cell Operation	" " 3	Wed., and Fri.	5:15 P.M.	1 "
Electricity	Electric Shop	Wed., and Fri.	5:15 P.M.	1 "
Foreman Training	Room No. 1	Mon., Tues., Thur. and Fri.	3:15 P.M.	3 "
Foreman Training	Library	Tues., and Thurs.	7:30 P.M.	1 "
Humanics	Board Room	Fri.	7:30 P.M.	1 "
Millwright Practice	Room No. 1	Tues., and Fri.	5:15 P.M.	1 "
Paper Chemistry	Laboratory	Mon., and Wed.	7:30 P.M.	2 "
Papermaking	Room No. 1	Tues., and Thurs.	1:00 P.M.	3 "
Pipe Fitting	" " 3	Mon., and Fri.	7:30 P.M.	1 "
Sheet Metal Drawing	" " 2	Tues., and Thurs.	7:00 P.M.	1 "

Steam Plant Practice	"	"	3	Tues., and Thurs.	1:00 P.M.	3 "
Soda and Sulphate	"	"	3	Wed., and Fri.	1:00 P.M.	3 "
Sulphite Practice	"	"	2	Wed., and Fri.	1:00 P.M.	3 "
Teacher Training	"	"	1	Thurs.	5:15 P.M.	1 "

The above comprises a total of 33 groups of 17 different subjects.

As there were no text books on some of these subjects, the instructors, who are picked from among the superintendents, foremen and technical workers, prepared and wrote their own texts. Some of these texts have been published in trade journals and are recognized as among the best published.

The general attitude of all the workers is one of respect towards those "going to school"; it has really become very popular. We are constantly being asked, "when will the classes start for the winter?"

I have seen middle aged men playing pool and one stop playing and say, "I must stop now," and when his fellow players asked, "why," he would say, "it is time for my class." This was apparently a good and sufficient reason, for there was never any laughter or words of criticism when a man would give this as a reason for not playing any longer.

If the above results can be produced in one plant or industry through foremanship conferences, the writer contends that it should be somewhat similar in all industries where this type of vocational training work is introduced.

Co-operation of School Boards

The logical agencies to promote this kind of industrial education are the local boards of education co-operating with the state boards of vocational education. Every state department of education should have, and most of them do have, a man qualified by experience and training, not only to conduct foremanship conferences but to train others to do the same. Many local school boards, especially in industrial cities, could well afford to have a person employed to conduct this type of training for the city's industries and workers.

In the past, nearly all the foremanship conferences have been conducted for only a short term, from one to four weeks. This method was exceptionally fine for the introduction and starting of foremanship conferences in a large number of industrial establishments. That time is now passing and we should arrange for this type of educational work to continue over a period of at least six to ten months and better still the entire year. These classes have a real value and practically all executives would be glad to have this service.

As one superintendent has written: "Foremanship and vocational training in an industrial plant is of inestimable value, when properly conducted. The returns on this investment, however, may not be immediately measurable or noticeable and may require more or less time. From personal experience and observation I can unreservedly state, however, that this training reaches the inner man and produces results which cannot be obtained by financial or many other inducements. It develops in the foreman or workman a personal initiative, reponsibility and analytical mind towards his job, whereby he becomes more contented, better satisfied and consequently performs his duties more efficiently. The old cry of 'you are training your men for someone else' is negligible when compared with the general results gained."

It cannot be stated too strongly that foremanship conferences should be conducted continuously or at least nine to ten months in the year in order to secure the greatest amount of good from them. We would not consider the teaching of reading, writing, or arithmetic, nor any other school subject for just a few weeks and then expect the student to remember it the rest of the year, nor would we expect him to continue his studies. The same applies to educational classes for adults.

A Common Subject

The foremanship conference is to the foreman what mechanics is to machinery. We might very easily call it "humanics." For it is largely the human problems that we discuss and endeavor to solve in these classes.

An instance comes to mind of a foreman conference leader who had for sereval months been conducting a foremanship conference with the foremen of the plant. He was a stranger to the workmen in the plant. One day just before the scheduled time of the foremen meeting he hurried into a certain department and inquired of a workman the whereabouts of the foreman. Said the workman, "He's just left. They have a school here for the foremen and I think he's gone to it." "What kind of a school?" inquired the conference leader in mock astonishment. "Don't know," said the workman as he turned to his task, "it must be all right. It's made a difference to us men."

Then again, foremanship conferences need not be confined to manufacturing plants alone; it can be used by merchants, office executives, and most any line of business with just as much effectiveness as with manufacturing. Another group of foremen who would be greatly benefited by such a course of training are those in the different building trades such as carpenter, mason, painter, plumber and electrical foremen. An interesting training program could be developed for them which would be of great assistance not only to them but also would react to the benefit of their workers and employers.

In case there are not enough foremen in any one line of work for a class, they could be combined advantageously because the subject discussed of human relations is common to all foremen.

Several years ago the writer was asked to conduct a foremanship conference in a certain coal mine. The conference was held with two sessions daily, the first from 6 a. m. to 9 a. m. on the company's time, the other from 6 p. m. to 8 p. m. on the workers' time. The miners asked for this arrangement, although the company was willing to have both sessions on company time. At the expiration of two weeks when the writer left, the men asked the engineer in charge if he would not continue the classes and act as leader of the group discussion, with the meetings to be held weekly. These classes were held regularly for several years. At the end of the first ten months, I asked the engineer, "What results can you see from having foremanship conferences or classes with your men?" His answer was, "Before we conducted foremanship conferences, it was impossible to keep our mine safe or insured in any insurance company longer than the first inspection by their inspectors, and now our mine is perfectly safe. There is not an insurance company in America that would not be willing to insure our mine as a first class risk. From being kicked and buffeted from one insurance company to another, we are now commended and praised throughout the country. I consider this change is all due to our foremanship conferences."

Improving the Minds of Workers

Industry has devoted most of its endeavors to improving machinery and methods. Much less has been done by industry towards improving the workers. Let us consider the workers. We find their average educational age will be from the 4th to the 7th grades. This is due no doubt to the fact that the great majority of our boys and girls can do work easier than they can study abstract things. Comparatively few of our schools recognize nor try to do anything for this group, the main aim being to prepare everyone for college. So most of our boys and girls who become the workers in our industries drop out of school for various reasons between the 4th and 7th grades. They have not had an incentive to develop themselves mentally, their general attitude being "their study days are gone forever." It is necessary to change this attitude and the foreman is one of the best ones to do it. Because of his close association with the workers, from eight to ten hours or more a day, five to six days a week, the foreman gradually develops a tremendous influence upon their lives. Then again he has the say as to how much their wages shall be and how long they shall hold their jobs.

The foreman may not have had much schooling himself, but he has studied his job, applied himself and has shown unusual ambition and skill in his particular work. If we can get him to realize that his department will grow and that the plant will grow as the workers grow and develop mentally, we have done a good job. With the foreman being the "key man" in industry, it is first necessary to sell him the idea of education and vocational training, before attempting to interest his workers. There is no more effective way of getting the interest and whole hearted support of the foreman in the education of his workers than the foremanship conference.

Swapping Experiences

The routine work of many industrial plants has the tendency unconsciously to get the foreman into a rut. The foremanship conference gives him the opportunity to shake himself loose from the rut; it gives him a "bird's eye" view of his job and starts him to thinking and analyzing it. Discussing his problems with the other foreman gives him their combined best judgment. The swapping of these experiences and the solutions which the various foremen have worked out is the objective of each conference. At first it is somewhat difficult to get the foremen to feel perfectly free to discuss their problems. To overcome this, hypothetical cases are used. This helps to bring to their minds similar experiences. When one foreman starts to tell his experiences, others will do the same. The discussion then becomes general. It is one of the foreman conference leader's responsibilities to see that everyone in the group takes some part in the discussion; for it is only by getting the opinions and experiences of all in the group, that a satisfactory solution of the problem under discussion can be reached. In this way the combined best judgment of all the foremen becomes the accepted answer to the problem.

Sometimes, suggestions very helpful to the plant management are developed in the foremanship conferences. In one plant, the foremen had considerable trouble getting material and supplies from the store room, because the material could not be found. A number of times the supplies had to be reordered causing much lost time, and a slowing down of production, because there was no system or method used in storing supplies and equipment. Considerable attention was given to this condition by the foremen in their foremanship conference; some very good plans and suggestions were worked out by the foremen; these were submitted to the management and accepted. The store room was reorganized with a resulting reduction in supplies amounting to many thousands of dollars.

It is the skillful leading of the conference at such opportune times as this that spells success. Not every individual, of course, is adapted to leading foremanship conferences. Then, too, a certain degree of training for leading foremanship conferences is necessary. This training for leading foremanship conferences is easily obtained throughout the nation due to the pioneer work of Charles R. Allen of the Federal Board of Vocational Education. The Federal Board through Messrs. Allen, Wright, Cushman and others, members of its staff have trained many members

of the staffs of state boards for vocational education in how to successfully conduct foremanship conferences and to train others to conduct them. There is now hardly a state board in the union that does not have available someone able and willing to render this service to industry and its workers.

Timber Waste, Paper and Stockings

Many Valuable Products Are Derived from Wood

By FRED GROVE-PALMER, A. I. C.

THE amount of wasted wood that arises in the timber mills of the world is giving rise to considerable alarm on the part of many of those who are vitally interested in the matter. In some of the lumber mills of America and Canada, the wastes are being dealt with in a scientific manner, some details of which will be given later, but in the vast majority of mills, no efforts are made adequately to cope with colossal waste that is taking place.

In Australia, this destruction of millions of pounds worth of potential paper pulp and artificial silk proceeds unchecked and to add insult to injury the Commonwealth Government is apparently so proud of its misdeeds that it actually issues propaganda films showing how this enormous waste of the country's resources is carried on, thus glorying in its own inefficiency.

Thirty years ago, this same state of affairs held sway in America, also, but to-day the old extravagant use of lumber is at any rate checked, though it cannot be said to be done away with. The lumber camps have existed only with a view to cutting down the virgin forests and taking the profits on the wood with no thought for the future.

Re-afforestation is the obvious remedy for the denuding of land of its trees, but the newly planted forests would not be in a condition to yield profits for between thirty and sixty years. In other words, the lumbermen are asked to plant trees for the benefit of their grandsons. The American does not do this; he asks, very wisely: Why should I plant profits for posterity? What has posterity done for me?

With that mental attitude, re-afforestation is not likely to be adopted unless a far-seeing government insists upon it. This it is doing to a certain extent, but government efforts would be far more effective if the individual landowner also had the same breadth of outlook.

Actually it is not absolutely necessary to plant young trees in all cases, for in many forests, if there is protection from fire, the self-planted seeds or the roots of the cut ones will supply the new forests in the same way, as we find in England where tree-cutting is carried on scientifically.

Still, there is no doubt that a gradual change is taking place in the timber industry. The formation of the National Lumber Manufacturers' Association has led to a wide spread of education in the outlook of the woodmen. Ten years ago, we are told, there were only three commercial forestry enterprises among the vast number of mere timber cutters, while last year the membership included more than one hundred really substantial lumber properties which are being run with a view to continuous operation; the cutting being done on sections of the forest each year, which are then tended, with the intention of allowing the regrowth of wood for the use of succeeding generations. According to figures published by the United States Chamber of Commerce, there are nearly 200 owners of timber lands in America who have adopted or who are planning to adopt a system of cutting somewhat on the lines suggested above. In some cases, five young trees are being planted for every mature one that is cut down, and all precautions are taken to prevent fires. This is in addition to the forest rangers who are supported by the federal and state forestry departments. The few wiser companies who adopted a conservation scheme many years ago, are looking forward to getting a reward for their virtue in about four years' time.

There are companies also, who have made other plans which, though satisfactory to themselves, are not so good for others. This scheme is to leave their own American land to recover itself while they acquire and cut forests in Canada in places where conservation has not yet been made a legal responsibility. This wearing of the other fellow's shoes so as to save your own seems almost to verge upon sharp practice.

Pulp, a By-Product

A number of lumber companies are running pulp and paper mills as a side line, and in thus utilizing slash for the production of chemical and mechanical pulp, are properly converting some of their waste into a profitable commodity.

In certain mills definite figures have been ascertained concerning the waste in manufacturing timber; these may be summarized as follows:

Commercial timber, minimum size, 6 feet long and 4 inches or so in diameter	56%
Solid waste	24%
Sawdust	20%

As regards the solid waste, about 25 per cent of it is bark, which is used for fuel, but much of the remainder can be utilized for barrel staves, and box and crate making.

There appears to have been no attempt made to ascertain the amount of waste that occurs between the felling of the trees and the arrival of the logs at the mills. The quantity of available cellulosic material that awaits redemption is therefore incalculable, and its value with due allowance for cost of collection, must be enormous.

Having thus obtained a slight idea of the production of timber waste, it will be well to give some attention to the manner in which it may be converted from a mere nuisance to commercial commodities of great value.

A Contribution to Civilization

It is a fact, though it has not perhaps been fully recognized, that the use of wood pulp as the cellulose base for the manufacture of paper, and still more recently for the making of artificial silk has been one of the most important contributions to the civilization of the world that chemical science has given us.

It has been the means of a vastly wider spread of education because it has permitted the dissemination of literature in a much cheaper form than had been possible before, and later we have been able to enjoy the benefits of all those beautiful fabrics made of artificial fibers, which, in the form of stockings, dresses and underwear, have brought happiness into the lives of millions of women all over the world who, without it, could never have been able to afford the luxury of something that is very near to silk.

Prior to the discovery of the wood pulp process, which has been very justly described as epoch-making, paper was made from linen and cotton rags, which owing to the increasing demand were constantly rising in price. Paper made from wood may not be so good as rag paper but it is very much cheaper and it serves its purpose, besides freeing the rags for use in papers that must be of higher quality.

Although very large quantities of artificial silk are made from cotton linters, far larger amounts have wood pulp as their origin, and when we consider that experts have placed the limit of the world's timber resources as being sufficient only for another 30 years, it can be realized that the destruction of wood wastes is as much a crime against humanity as was the terrible waste of valuable by-products in the coke-ovens of twenty years ago.

It will be seen therefore that the preservation of the timber of the world can only be achieved by welding sound forestry practice on to the highest chemical technology.

Some sorts of wood yield long-fibered pulp which gives considerable strength to the paper in which it is used; other woods give short fibers; these supply the body of the paper. Some woods, such as American redwood, contain coloring matter, others contain resin or tannins, all of which are not suitable for paper pulp or making artificial silk stockings. These components must be removed and may be used in other directions where they are likely to be of value. It is simply a matter of chemical control of the processes which need to be modified to suit the sort of timber that is being handled at the time.

The soda process of making pulp is the one usually adopted for short fibered woods, and the sulphite process for those with long fibers. It may not always be an easy problem to find the best method of pulping a consignment of waste wood, but it is safe to say that there is no variety of tree growing for which a suitable pulping process can not be found by expert technologists. The whole business is essentially scientific and is one in which rationalization can be seen in a high state of development.

There is always that excellent point about a really successful chemical process such as this: it uses up the waste as it goes along, either employing them in future batches or else converting them into a saleable commodity that brings in additional profits. It is one of the "kinks" in the mind of the chemical engineer that he is only happy when his operations work in circles, as they are being fed with fresh raw material on one side and are pushing out finished products on the other.

The preparation of wood pulp requires the help of a large number of different chemical industries. This means additional prosperity and an increase in values all round. It would be necessary at first to take these commodities to the pulp mill rather than cart the wood waste to the chemical districts, owing to cost of transport, but as time goes on and the output increases, it is conceivable that the chemical factories would move out to the pulp locations in order to save on transport in that direction. Thus it may happen that districts which once were merely logging camps will become the centers of a highly organized manufacture.

Valuable Products from Waste Wood

It would not be correct to imagine from this that the world's wood refuse is sufficient in quantity to supply the world's demand for pulp. Such is not the case but the object is to point out one plan at least whereby it can be utilized to bring additional profit to any country or locality in which it is produced.

Nor should it be assumed that pulp is the only valuable commodity that may be obtained from timber wastes. Their destructive distillation will yield a number of very important substances having a wide range of uses. Among these may be mentioned acetic acid which is employed in the manufacture of one form of artificial silk; it is also used in dyeing and in the making of cellulose lacquers and enamels for the painting of motor cars. Acetic acid is also employed to fortify or to replace vinegar and for the production of many acetates that have their place in the arts and sciences, while there is a demand for it in the leather industry for the deliming of skins.

Sodium acetate is used in the dyeing and printing of patterns on fabrics; acetate of alumina finds a place in the manufacture of waterproofs. Chromium acetate is also used in dyeing, while the lead salt is employed for making a number of pigment colors, such as chrome yellows. Copper acetate is very extensively used as a spraying material to preserve plants from fungoid diseases.

Another product of the distillation is acetone which plays a very important part in the manufacture of cordite for the navy and army, as well as in artificial silk.

A third product is methyl alcohol used in the preparation of methylated spirit; it is a valuable solvent for fine oils, gums and resins, and enters into the making of synthetic dyestuffs.

The wood tar which is obtained during the distillation process, is utilized in the navy and mercantile marine for caulking ships, coating ropes, sails and masts, while it also has a value in medicine and veterinary practice for pulmonary and cutaneous troubles. The uses of creosote for the preservation of structural and other timbers are well-known.

Sawdust may be treated with caustic alkali to yield oxalic acid, a useful, though very poisonous, substance for cleaning and decolorizing fabrics. 100 lbs. of sawdust will provide between 50 and 60 lbs. of oxalic acid and the alkali can be recovered for future use.

The residual charcoal from the distillation is used, when mixed with glue, pitch and saltpeter, for making "briquettes" which form quite serviceable fuel.

By suitable treatment, wood wastes may be used for the manufacture of glucose, a form of sugar which is employed for diluting the "real" sugar in jam with the avowed object of preventing it from crystallizing. It also forms a part of the brewer's "materia medica" for making modern beer. The epidemic of arsenical poisoning in 1904 arose from the use of impure sulphuric acid in the manufacture of the glucose.

If glucose is subjected to the action of suitable yeasts, it is converted into ethyl alcohol which has a widening future before it as a motor fuel, and is largely used in America to supply the demand for alcohol for medicinal purposes of late years.

The circle of possible uses for wood refuse grows greater as the subject is more thoroughly studied. It embraces the production of chloroform; of methyl nitrate for making some dyestuffs; of ethyl acetate and amyl acetate, two very valuable solvents.

The turpentine makers of America have awakened to the value of the refuse of the pine forests. Instead of burning it, as was the habit at one time, they treat it with steam and this process now yields a very considerable par of the huge exports of turpentine and resin from the States. It is only during the past ten years or so that this "saving" has been a commercial proposition.

It will be evident from a consideration of these points that not only does wood enter into a vast number of different spheres under a great variety of guises, but it is far too precious to be wasted. The continued burning of wood refuse should not be allowed to go on; and if the immensely valuable piles of "waste" are properly utilized, it will remove from our forestry operations the stigma of a crime against humanity.

Blow Line Diameters

Effects of Small and Poorly Designed Blow Lines in Soda and Sulphate Pulp Mills

By ALBERT B. GREGG

PIPES of various sizes have been and are being used for discharging pulp from digesters to cyclones, diffusers and blow tanks. These pipes usually range from four to eight inches in diameter.

The use of the four-inch line has been discontinued in practically every mill where it has been introduced. It is doubtful if there is any such installation at the present time. The four-inch line was found to be insufficient for the proper discharge of the pulp from the digester. Common diameters of blow lines are now six and eight inches.

It is obvious that the same quantity of stock will blow through an eight-inch line more rapidly than through a six-inch line, if the blowing pressure is the same in each case. To use an example, one mill operating several large digesters have both six and eight-inch blow lines. It requires approximately twenty minutes to blow the digesters equipped with the six-inch lines, while those equipped with the eight-inch lines are discharged in from twelve to fifteen minutes. The digesters with the six-inch lines seldom blow clean; those with the eight-inch lines blow clean consistently.

Dirty blows are expensive whether they are reblown or not. Actual operating reports show that it required 16,000 pounds of steam to reblow a certain digester. The entire cook had consumed only twenty thousand pounds. If the stock is allowed to remain in the digester throughout a succeeding cook, it becomes overcooked and lowers the quality of that cook. Whatever is done with a dirty blow costs money.

Liquor is essential as a carrier of the stock during the blow. In large digesters, when small blow lines are used, there is a tendency for the liquor to drain through the pulp faster than the movement of the stock to the blow line. This results in a large part of the liquor leaving the digester before the end of the blow and renders the first part of the blow very "wet" and the last part "dry." Often the last part remains in the digester to be recooked or reblown.

In one mill, there was considerable trouble because of the continuous necessity for reblowing. Analysis of the situation disclosed the fact that a six-inch

line was used, and the turns closely resembled the twists of a snake. No fewer than seven turns in the line presented an almost impossible situation. Then an eight-inch line with long-sweep bends was substituted for the six-inch line. Now the digester is blowing clean. With fewer bends of longer radius, a six-inch line might have been satisfactory.

In a few cases where the blow line has been carefully planned to eliminate a large number of the usual bends and where the blow tank is situated at such a point that the discharge from the blow line is considerably below the top of the digester, the six-inch line is sufficient.

Experience has taught that blow lines should be designed with as few bends and turns as possible. In all cases, long-sweep bends should be planned and the discharge located at as low a level as practicable.

Small things often cause the larger ones to make trouble. A blow line is a very small part of a mill, but reblows increase production costs unnecessarily.

Cost Accounting in the Paper Industry

Part XIV—The Sulphite Mill

By D. A. WILCOX

IN the preceding article, a rather sketchy draft was given of the operation of a predetermined cost system for a one-product mill, taking a sulphite mill as an example. In this and succeeding articles, we shall endeavor to fill in some of the gaps in the sketch and set forth a more complete system. Readers will understand that each mill presents its own particular problems and that any system adopted will have to take this into consideration. In the earlier articles the course of the pulp was followed through the mill, without reference to some of the important elements of the system in order to maintain continuity.

Queries and Answers

In order to encourage discussion on the subject of cost accounting in the paper industry, the author of this series of articles is prepared to answer to the best of his ability any queries on cost accounting that may be directed to him.

Overhead Centers

The four centers of the mill previously mentioned, viz., (7) steam plant, (8) electric power, (9) general charges, (10) fixed charges, are all of great importance but were lightly treated. Let us, therefore, now consider each of them in some detail.

Steam Plant—This center includes all the steam generating departments of the mill, including the main boilers, wood-room boilers and the like. It includes all auxiliary apparatus from the coal pile, through the boilers themselves and all piping and distribution equipment, right up to the point of the utilization of the steam. In short, this center is responsible for both generation and distribution of steam, but not, of course, for its use.

In connection with the fuel used, there are two things to be considered. Fuel may consist entirely of coal or it may be coal and wood refuse, such as culls and the like, or it may even include electric boilers. In the latter case, it is advisable to create a separate center for them and later transfer the total costs into the steam plant so as to get a total cost for steam and also a separate figure as to cost of operation of the electric boilers.

Coal as Fuel—In the case of coal the matter is relatively simple so far as the mechanism of accounting is concerned. What we desire is to watch the consumption of coal as compared with a predetermined standard. Of course with this, as with all other comparisons between actual uses and standards, everything depends upon the accuracy of the means of measurement, and the accounting refinements excusable are in proportion to the means of measurements available. Thus if the coal is actually weighed in by weightometers, much reliance can be placed upon the comparisons and care must be taken to set up the accounting machinery, whereas if the coal used is merely estimated, any considerable amount spent on gathering figures and analyzing them would be foolish. Assuming, however, that the actual use of coal is really known, we would have recourse to our familiar device, the variance. We would settle on a standard usage of coal per 1,000 lbs. of steam (ton or hp. as the case may be) based upon local conditions, the nature of the coal, etc., and we would then debit the actual use of coal to a "coal variance account" and credit this account and debit the steam plant with the standard use of coal based on the units of a steam generated. The balance remaining in the account then represents the value of the excess or saving of the actual under the standard. In setting this standard, care must be taken to allow for seasonable conditions; i. e., that coal usage will be higher during periods of cold weather than in warm weather. The standards should attempt to represent a real measure of efficiency without having to allow too many "ifs" and "ands" to explain it.

Culls as Fuel—When we come to the matter of culls and refuse, however, a more difficult problem is presented. What shall we charge the steam plant and what shall we credit the wood for this material? It will be remembered that we said we would charge the wood used at actual cost to a "Wood in process"

account and then credit this account and debit "Chips in process" with the actual cords of wood used at the standard price. But what shall we do about the wood that never got to be chips?

Accounting for Culls—When wood is purchased it may be expected that some culls will be received which can only be used for fuel. Some method must be provided to take care of this situation so as to get a proper cost at which to charge the pulp for wood actually used as chips.

In the actual cost system outlined in a previous article, this is handled as follows:

All the wood is purchased and as received and scaled in, the scalers make an estimate of the amount of culls received. Only wood reported by them as good (note the words "as reported by them") is paid for, the amounts scaled in as culls being rejected and sent to the wood-room boilers. ments, but all the wood received is taken into the piles whether culls or not.

Each month the quantity of good wood and the culls in the piles are figured separately and the percentage of culls determined. When the wood is taken into the wood room it is carefully sorted, the culls being rejected and sent to the woodroom boilers. They are carefully scaled but the amount of good wood used is estimated from the number of digesters blown, there being no other means of measurement. Of course, this is checked from time to time by inventories of the wood piles.

Distributing the Cost of Culls—Invariably it is found that the percentage of culls actually sorted out exceeds the percentage calculated to be in the piles when the wood was received. This means that some culls were paid for as good wood and must be accounted for.

Suppose the per cent culls presumed to be in the pile was 5 and that, according to calculations 2,500 cords of good wood and 500 cords of culls were sorted out as shown by scaling. This makes a total of 3,000 cords of wood taken in from the piles. The average price of wood in the piles, let us say, is $20 a cord. Then, the total wood equals 3,000 cords; and 5 per cent culls allows for 150 cords.

Thus, the excess culls equal 500 cords, minus 150 or 350 cords, which were presumably paid for as good wood. The pile is then credited with 2,500 cords of good wood and 350 cords of culls, all at $20 a cord.

The cost of the culls is then divided into two parts, their fuel value being charged to the steam plant and the excess, or loss, to the pulp.

Assume that the fuel value is $5 a cord.

We would then debit the steam plant with 500 cords at $5 or $2,500.

The total excess culls amounted to 350 cords at $20, or $7,000.

Thus, the excess cost of the culls, less the fuel value to the steam plant, is the $7,000, minus $2,500 or $4,500, which is charged to the pulp. This is entered in the costs as "Culls" and charged in that system to the Pond.

In a standard cost system we could handle this in a similar manner. Our standard cost for wood would however make allowance for the loss due to culls. Thus, in the above case, assume we set a standard price of $21 a cord, the $1 over the $20 being our allowance for the cull loss.

Then we would debit wood in process with 2,850 cords at $20 =		$57,000
Credit wood in process with 2,500 cords at $21=	$52,500	
(Debit chips in process)		
Credit wood in process with 500 cords culls at $5 =	2,500	55,000
Variance due to excess culls		$2,000

If the wood is barked, rossed or otherwise treated, various methods must be used to determine the loss. There is, of course, no accurate way except by measurement before and after treating, but percentages based on tests may be used, or the wood actually chipped may be calculated back from the number of digesters cooked and so forth. In either case, the information obtained is questionable and no great pains need be taken as to the accounting machinery for setting the variances, as they would be based on estimates only as regards usages, etc., and hence not very exact for purpose of a control.

The only way is to measure everything, and this applies to all forms of usages, but the benefit of doing this is dependent upon the possible savings through an accurate control. If the possible losses are great, then careful control has possibilities for great savings and considerable expense for measuring may be justified.

All that need be said is that so far as possible, an effort should be made to determine the loss caused by shrinkages of wood in the wood-room and the steam plant should bear a fair charge for its use as fuel.

Steam Conversion Charges

The next step is that of the conversion charges. As said before, the steam plant is to be an exception to the general rule as regards overhead and fixed charges insofar as they will be assessed against it. Therefore, we shall have the following conversion charges in the steam plant:

Fixed, including Depreciation.
- All forms of boiler plant insurance and a fair proportion of the general mill fire insurance.
- A fair proportion of the mill taxes.
- Reserve account for building repairs.
- Light.
- Labor, including salaries directly chargeable to the steam plant.

Supplies.

Electric power.
Repair labor and materials.
General overhead: a fair proportion of the total.
Miscellaneous charges.

To this is added the cost of fuel in order to get the total cost of steam. All these are estimated for a year in advance under what will be considered normal operating conditions. The amount of steam to be generated will also be estimated on the same basis, and a standard rate per ton (or whatever unit is used) will be calculated by dividing the total annual expenses by the total units generated. On this rate, the steam plant will be credited for earned burden and the steam variance account debited by multiplying it by the units of steam actually delivered to the mains. If the steam is entirely unmetered at the boilers, it may be possible to estimate quantity generated from the amount of feedwater evaporated or some other means. In any event the quantity of steam generated, times the rate per unit, is the earned burden of the steam plant and the difference between that and the actual expenses is the unearned burden and variance for the period.

Fixed Charges—Steam Plant

Just a word here as to the fixed charges. The depreciation will be calculated in the usual manner. The plant will be appraised and classified according to percentages of depreciation and the charges on each calculated and the total for the entire mill calculated. Taxes for the mill will be estimated and so much charged against the steam plant as the appraised values there bear to that of the mill as a whole. Fire and other general insurances will be handled in the same manner. Boiler plants carry with them special forms of insurance such as boiler explosion insurance, boiler use and occupancy, and the like. The coal pile is sometimes insured separately from the other inventories and this insurance should be included in the fixed charges of the boiler plant. All these forms of insurance should be estimated for the year and included.

Repairs to buildings is an item of interest. Owing to the nature of these charges and the fact that they are non-recurring except over long periods of time, it is only fair to set up a reserve to handle them and charge off an even amount each month. It will be found that 3 per cent of the value of the buildings and equipment a year will be a fair average for this expense. This sum is credited monthly to the reserve and debited to B. C. 10 Fixed Charges, and a fair proportion credited to B. C. 10 and debited to B. C. 7 as part of its fixed charges. As actual expenses are incurred for repairs to buildings they are debited to the reserve and any balance remaining at the end of the year charged off to Profit and Loss. In this way such expenses are spread out evenly over the year and not charged against the profits of any particular period.

Light and heat is also estimated and set up in a similar reserve and handled in the same manner so that the cost of pulp during the winter months will not be greater on account of these items than the cost during the summer months.

All fixed charges of whatever nature are charged first to B. C. 10 and then transferred to B. C. 7. This makes for ease in handling (avoiding any question as to their disposition), and gives an idea as to the total amounts involved and a better control.

General Mill Overhead (Steam Plant)

It is only fair that the steam plant should bear a fair amount of the general mill overhead. How this should be done is controversial. In any event it will have to be an arbitrary amount. One way is to credit B. C. 9 (General Overhead) and debit B. C. 7 with a fixed percentage of the total B. C. 9. This may be the ratio that the steam plant pay roll bears to the total pay roll of the mill; the man hours in the steam plant to the total man hours in the mill or a combination of the total pay roll, plus total of supplies (not including coal), plus the total of repairs and fixed charges to the similar total for the whole mill. Any one of them is a pure assumption. Any method that seems fair and equitable may be used and, simply because it is the easiest, we recommend the pay roll ratio.

Estimate the total annual pay roll for the steam plant and for the entire mill, not including salaries, and find the proportion the one bears to the other. Say it is 10 per cent. Each month, then, after the total expenses for B. C. 9 have been determined, credit the center and charge B. C. 7 with 10 per cent of this total. It would even be fair to make a fixed charge to B. C. 7 on the basis of the 10 per cent of the total estimated charges to B. C. 9, including this credit as part of the earned burden of B. C. 9, as will be explained later.

Electric Power—If all the electric power is purchased, there is no problem. All that is necessary is to charge a power account and then credit the account and debit the centers with their shares based on meter readings, if available, or on estimated percentages of the total based on the power requirements of the motors, etc.

If desired, the bill (or total expense of the center or earned burden) can be debited to an "Electric Power Variance Account" and this account credited with standard usages, based on some cost per ton or other method. Just how far you wish to go with these variances is purely a matter of individual preference. The principle is there—you can use it as much as you wish or leave it, if the information yielded is not worth the trouble of handling the account. In the case of electric power it would seem a rather unnecessary refinement.

If power is generated at the mill, it is a different story. An electric power center will have to be set up and handled just as any other center, with the object in view of finding the actual cost of producing power.

If there be only a substation which entails certain expenses, a center may be set up also and the power charged to it, then the total cost spread over the operating centers.

In the case of generated power, there will have to be a charge for steam. This will be handled in exactly the same manner as any other center using steam except that in the case of power generated by a bleeder turbine, care will naturally have to be taken to adjust the steam charge to the quantity of heat units taken out of the steam and the balance charged to other centers for the bleeder steam. This is an engineering problem and the way out will be indicated by the engineers.

Incidentally, as regards the matter of steam charges in certain cases, as in the generators and dryers, the condensate may be returned to a hot well and with it some of the heat units to the steam plant. If this is a sufficient amount, these centers must be considered in this matter in making a charge for steam. Remember that what the boiler plant furnishes is a certain number of heat units in the form of steam and the basis of the charge is the quantity of these heat units used at the various points.

Mechanical vs. Human Control

By IRVIN S. THYLE
President, Thyle Machinery Company

CONTROL has become, regardless of whether it applies to finance, traffic or production, the most important requisite of a properly co-ordinated organization.

The evolution of mechanical means for releasing man power for other duties has in many instances been brought about through competition and labor turnover, as well as standardization of the finished product. The result is reflected in increased production and efficiency and a stabilized product. This condition will continue and is partly responsible for the development of the specialist, who confines his activities toward one particular problem.

Engineering, both mechanical and sales, has been the contributing factor to this automaticity, and the benefits derived are in a large degree responsible for making the United States the industrial leader of the world.

Two articles under the signature of William Sibley in the January and March, 1929, issues of THE PAPER INDUSTRY entitled "This Age of Change" forcibly emphasized the reason for mechanical development and its bearing on your own and extraneous fields.

The articles state in part, "Our greatest need today is personal and commercial acceptance of changes. This is the age of change and unless we recognize that fact—alter our mental structure to conform to the changed physical structure—we must be content with the position of followers."

The conception of an idea often produces ridicule in the mind of the layman, but as application is advanced and becomes tangible, and the predominating features become apparent, coupled with successful operation, the critic must recognize the changed condition or become the follower. If Bell had been influenced by the comments of the critics, the successful operation of the telephone would possibly have been delayed many years.

A recent development as applied to the paper industry is a beater control. Irrespective of its merits and its possible universal adaptability to the industry, the fact remains that its potentialities warranted capital investment and installation under operating conditions by technicians qualified as such in the pulp and paper industry. The preliminary operations have caused public criticism and produced its adherents. The control of stock is but another change likened to the automobile, paved highways, the robot, etc.

In a recent issue of another trade magazine, a critic comments on the undesirability of replacing the human eye and human hand by a mechanical gadget. The suggestion is made that these "fly-by-the-minute" affairs be forgotten, as human judgment is infallible and makes no errors. Nevertheless, the blacksmith with the discerning eye and his color card has been replaced by the thermostat and other mechanical control for properly treating his iron in the production of a uniform sheet of metal.

The engineers of this company have specialized for several years in the automatic control of density and viscosity, our instruments being in service on a great variety of pulps and in many foreign countries. Heretofore, our activities have been confined to inorganic and metallurgical pulps. During the last eighteen months the flexibility and adaptability in the control of paper pulp has also been proven.

As pioneers in our chosen field, we believe the human agency in the control of consistency belongs to the horse and buggy days, and that the papermaker with his developed sense of taste and feeling will not suffice in the control of alum, size and per cent solids, any more than other "rule of thumb" methods which have been thrown in the discard by practically every industry.

The fallacy of the senses does not permit constant regulation. One may have a developed sense of taste and feeling and be competent to maintain a control within certain limits, but his successor in charge may be directly opposite in his opinions. Consequently, with each shift a variable result is obtained. The mechanical control is not swayed by outside conditions, has no opinions, but operates through known mechanical laws over an indefinite period.

It is surprising in this age of industrial achievements to read an article emanating from the pen of a technician, advocating the discard of an idea that has possibilities and reverting to the promotion of practices that may have been considered proper by our forebears.

Current Thought by William Sibley

Foreign Competition and Domestic Taxes

AMERICAN industry is just now entering the fourth phase of competition. And, as in anything else, be it mathematics, music, or manufacturing, the progressive steps to come will be increasingly difficult to combat and overcome.

Back in the days when Dr. Franklin, Jefferson, Jay and Hamilton wrote the Constitution and established the world's first republican form of government, thereby creating the soil from which was to spring our present day prosperity, the greatest and most serious competition to industrial enterprise was natural forces. Rivers, mountains, forests, plains, climate, all combined to limit expansion of industrial enterprise. Natural forces were the first form of competition to American industry.

Some years later, with the development of the railroad, steamship, telephone, and other tools of industry, the opposition of natural forces was largely overcome. But then, as now, public acceptance of the new tools was slow to crystallize, and so for a number of years the worst competition facing American industry was public apathy and the opposition of ignorance.

With the growing appreciation of the need for and value of mechanical tools, however, American industry made rapid strides; it lifted itself to levels heretofore unknown to man. With this development, American industry found itself confronted with a new and strange type of competition—inter-industrial. So great had become our production that to gain its part of the limited American income, one industry was forced to compete with a totally different industry. Candy was in competition with tobacco, lumber with steel, paper with textiles, fruit with meat, and automobiles with the building industry. This was the third phase of competition confronted by American industry.

By no means have we completely overcome any of these forms of competition. We still must combat natural forces and the opposition of ignorance, while inter-industrial competition has yet to attain its greatest intensity. In addition to the burdens of this varied competition, we are now being confronted with a fourth—that of **foreign** competition.

Up to the present time, American industry has been so far in the vanguard of world enterprise that we have not been greatly concerned with production from overseas. Foreign countries have been slow to adopt republicanism, and without a form of government which permits of private initiative, industrial progress as we know it cannot exist. The astonishing strides of American industry and the consequent high level of our living standards, however, have changed the foreigner's attitude toward republicanism, with the result that in all save a scant half-dozen countries, governments have been modified to more closely parallel that of the United States. This modification has, and will continue, to permit of rapid expansion for foreign industry.

Even now, the larger industrial enterprises of Europe and South America have established a Committee for the Dissemination of Industrial Information. This Committee is to function as a sort of clearing house of information on all matters pertaining to industrial production and plant operation. Naturally, the United States is to be their chief source of information.

This means that full and complete information regarding our methods and operations will be made available to all who wish to adopt them, either in toto or in part. And also, that with the modified governmental policies, the adoption of American methods will rebound to the benefit of those who expend the effort.

I mention the formation of this Committee only to indicate the serious attitude the foreigner holds toward our business. There are countless other factors which enter into the picture of world com-

petition. High speed transportation, radio communication, the world-wide desire for fewer wars, the partial eradication of racial prejudice and suspicion, tremendously increased travel, and a hundred and one other equally important factors are all contributing to the development of world competition.

With the certain advance of world competition there must be, if we are to continue to progress, a dimunition of our industrial burdens in other directions. Without ebb and flow there can be only death. With the added handicap of world competition, American industry must aggressively begin the lightening of our established burdens—and this should be done in advance of the time needed.

One of the burdens now resting heavily on American industry is taxation. Present day taxes are much more of a handicap to American industry, (and to American prosperity), than is commonly supposed. Before the War our taxes amounted to $22.73 per capita. In 1927, these had risen to $76.52 per capita. During this same year the manufacturing industry, as represented by both corporations and individuals, paid 55 per cent of the total income taxes collected by the Federal Government—this percentage representing over four per cent of all gross revenue. And this in federal income tax alone!

Citation of the foregoing figures is made not to intimate that they are unjust but merely to emphasize the burden they impose and to crystallize the thought that a general reduction in taxes, particularly state and local, is absolutely essential to the prosperity of American business and as a means for insuring economic stability.

When in the management of our industries we find it necessary to reduce expenses, we look first for the causes of the largest percentage of the outgo. Applying this rule to our tax problems and having in mind the data given, the importance of immediate relief for corporations is apparent. It opens the doors for controversial discussion, of course, especially as to how and where reduction should be applied; but there should be small reason for controversy upon the broad principle involved.

According to Mr. Fred W. Sargent, president of the Chicago and Northwestern Railroad, in a statement published by the Metropolitan Life Ins. Co.,:

"From the years 1919 to 1929 inclusive, our Federal Government reduced its interest bearing debt by $9,700,000,000. This is at an average rate of almost $1,000,000,000 a year. Never before in the history of the world has any country attempted such rapid reduction of its debt or imposed taxes upon its citizens and its industry for the purpose of paying off a debt with such great rapidity.

"The debt of the United States Government reached its maximum in August, 1919, when it amounted to the huge sum of $26,348,000,000. Since that time and up to June 30, 1929, $9,710,000,000 had been paid off, leaving the total Government debt on that date $16,638,000,000. Of this amount, $768,000,000 consisted of debts created before the war. Deducting also the funded obligations of foreign countries amounting to $11,570,000,000, therefore, the total of our war debt, sometimes referred to as the domestic part of the debt, is now only $4,300,000,000.

"Now, the largest portion of the funds which the Government has up to this time secured for the retirement of the national debt has come from the Treasury surpluses—collection from tax-payers over and above total Governmental requirements. For the years 1923 to 1929, this surplus amounted to $2,662,912,000. The second largest amount has come from the sinking fund which was created by Congress effective July 1, 1920.

"Compilations made by the Tax Department of the United States Chamber of Commerce show that the sinking fund, plus the payments to be received from foreign countries, should retire the entire domestic part of our debt, to wit, the $4,300,000,000 at a time not later than 1936, or in six more years. It is also shown that the sinking fund alone should retire this part of our debt not later than 1939."

From the above it must be plain that if American business is to receive the assistance it most urgently needs, not only further Federal tax reductions, but tax readjustment programs by state and local governments must be made as rapidly as possible.

Whether these may best be accomplished through additional improvements in federal machinery that will produce a smaller budget, or by other means—for example, through reduction of the annual surplus above referred to—is a question upon which forward thinking citizens have various ideas. With proper appreciation on the part of Federal Government officials, supported by intelligent opinion on the part of business and the public generally, American ingenuity will find some means of meeting the situation unquestionably. In the meantime we should concentrate our attention upon state and local taxation to the end that it will follow the downward trend of federal taxes, irrespective of the future course pursued by the Federal Government.

Good government in the hands of good men, courageous men who seek office to render a public service rather than to satisfy personal ambition or to secure a living out of the public treasury, is perhaps the only solution of the problem involved; and to that end it may be that a social awakening is needed—one that will make good men and women everywhere as enthusiastic about government as they are about golf, bridge, whist, the manly sports and the stock market. Our good citizens are in the majority, certainly, and it behooves them from the selfish standpoint of a prosperous industry, if for no other motive, to become aroused to an enthusiastic interest in all men and measures pertaining to their respective governments.

Contest Under Way in 123 Mills

35 New Mills Enroll in The Paper Industry Sixth Annual Safety Contest

Group A—34 Mills

ENTRANT	MILL	LOCATION
Amer. Writing P. Co., Inc.	Holyoke	Massachusetts
*Anglo-Canadian Pulp & Paper Mills	Limoilou	P. Q., Canada.
Bird & Son, Inc.	East Walpole	Massachusetts
Can. P. & P. Corp.	Belgo Div.	Shawinigan Falls, P.Q.
Can. P. & P. Corp.	Laurentide Div.	Grand Mere, Que., Can.
*Can. Int. Paper Co. Ltd.	Gatineau	P. Q., Canada
Champion Coated Paper Co.	No. 1	Hamilton, O.
Champion Coated Paper Co.	No. 2	Hamilton, O.
Container Corp. of Amer.	Manayunk	Philadelphia, Pa.
Dill & Collins Co.	Delaware	Philadelphia, Pa.
*Fibreboard Prods. Inc.	No. 1	Stockton, Calif.
*Fox River Paper Co.	Fox River & Telulah	Appleton, Wis.
Int. Paper Co.	No. 2	Fort Edward, N. Y.
Int. Paper Co.	Hudson River	Palmer. N. Y.
Int. Paper Co.	Niagara Falls	New York
Int. Paper Co.	Otis	Chisholm, Me.
Kimberly-Clark Corp.	Badger-Globe	Neenah, Wis.
Kimberly-Clark Corp.	Falls	Niagara Falls, N. Y.
Kimberly-Clark Corp.	Kimberly	Wisconsin
Kimberly-Clark Corp.	Niagara	Wisconsin
*Marathon Paper Mills Co.	Menasha	Wisconsin
Marathon Paper Mills Co.	Rothschild	Wisconsin
Marinette & Menominee Paper Co.	Park & Victory	Marinette, Wis.
Mead Pulp & Paper Co.	Chillicothe	Ohio
Minnesota & Ontario Paper Co.	International Falls	Minnesota
Nekoosa-Edwards P. Co.	Port Edwards	Wisconsin
Northern Paper Mills	Green Bay	Wisconsin
Northwest Paper Co.	Cloquet	Minnesota
*Ohio Boxboard Co.	Rittman	Ohio
*Pacific Mills, Ltd.	Ocean Falls	B. C., Canada
Powell River Co., Ltd.	Powell River	B. C., Canada
*Price Bros. & Co., Ltd.	Kenogami	P. Q., Canada
Richardson Company	Lockland	Ohio
Spruce Falls P. & P. Co.	Kapuskasing	Ont., Canada

Group B—43 Mills

ENTRANT	MILL	LOCATION
Albemarle P. Mfg. Co.	Richmond	Virginia
*Alton Boxboard & Paper Co.	Federal	Illinois
Bemis Bros. Bag Co.	Peoria	Illinois
Brown Paper Mill Co., Inc.	West Monroe	Louisiana
*Chemical Paper Mfg. Co.	Holyoke	Massachusetts
Container Corp. of Amer.	Cincinnati	Ohio
Container Corp. of Amer.	Ogden Ave.	Chicago, Ill.
Container Corp. of Amer.	Coated Board	Chicago, Ill.
Cornell Wood Prods. Co.	Cornell	Wisconsin
*Crocker-McElwain Co.	Holyoke	Massachusetts
Crystal Tissue Co.	Middletown	Ohio
*Dells Paper & Pulp Co.	Eau Claire	Wisconsin
*Donnacona Paper Co., Ltd.	Donnacona	P. Q., Canada
Escanaba Paper Co.	Groce	Michigan
Falls Mfg. Co.	Oconto Falls	Wisconsin
*Fibreboard Prods., Inc.	No. 2	Antioch, Calif.
*Fibreboard Prods., Inc.	No. 3	Los Angeles, Calif.
Finch, Pruyn & Co., Inc.	Glens Falls	New York
Ft. Frances P. & P. Co., Ltd.	Ft. Frances	Ontario, Can.
Great Lakes Paper Co. Ltd.	Ft. William	Ontario, Can.
Great Western Paper Co.	Ladysmith	Wisconsin
Hoberg Paper & Fibre Co.	Fibre Div. B	Green Bay, Wis.
Hoberg Paper & Fibre Co.	Hoberg Div. A	Green Bay, Wis.
Hollingsworth & Vose Co.	W. Groton	Massachusetts
Hollingsworth & Vose Co.	East Walpole	Massachusetts
*Hummel-Ross Fibre Corp.	Hopewell	Virginia
International Paper Co.	Berlin	New Hampshire
International Paper Co.	DeGrasse	Pyrites, N. Y.
International Paper Co.	Piercefield	New York
Kenora Paper Mills, Ltd.	Kenora	Ontario, Canada
*Kimberly-Clark Corp.	Lakeview	Neenah, Wis.
*Masonite Corp.	Laurel	Mississippi
Mead Fibre Co.	Kingsport	Tennessee
Nekoosa-Edwards Paper Co.	Nekoosa	Wisconsin
Ontonagon Fibre Co.	Ontonagon	Michigan
*Price Bros. & Co. Ltd.	Riverbend	P. Q., Canada
Rhinelander Paper Co.	Rhinelander	Wisconsin
*Rising Paper Co.	Housatonic	Massachusetts
St. Croix Paper Co.	Woodland	Maine
Strathmore Paper Co.	Mittineague	Massachusetts
Strathmore Paper Co.	Woronoco	Massachusetts
*Thilmany Pulp & Paper Co.	Kaukauna	Wisconsin

Group C—47 Mills

ENTRANT	MILL	LOCATION
Adams Bag Co.	Chagrin Falls	Ohio
Bedford P. & P. Co., Inc.	Big Island	Virginia
Bergstrom Paper Co.	Neenah	Wisconsin
Beveridge Paper Co.	Indianapolis	Indiana
Bird & Son, Inc.	Phillipsdale	Rhode Island
*Blandin Paper Co.	Grand Rapids	Minnesota
*Can. Int. Paper Co.	Fibre Board	Gatineau, Que., Can.
*Chicago Mill & Lbr. Corp.	Greenville	Mississippi
Container Corp. of Amer.	Mid-West Div.	Circleville, O.
Container Corp. of Amer.	Mid-West Div.	Kokomo, Ind.
*Continental Paper Co.	Bogota	New Jersey
Continental Paper & Bag Corp.	Ashland	New Hampshire
*Continental Paper & Bag Corp.	Greenwich	New York
Defiance Paper Co.	No. 1	Niagara Falls, N. Y.
Defiance Paper Co.	No. 3	Niagara Falls, N. Y.
Franklin B. & P. Co.	Franklin	Ohio
Gardner & Harvey Co.	No. 1	Middletown, O.
Gardner & Harvey Co.	No. 2	Middletown, O.
Gardner & Harvey Co.	No. 3	Middletown, O.
*Hagar Straw Board & Paper Co.	Cedarville	Ohio
International Paper Co.	Livermore Falls	Maine
International Paper Co.	Riley	Maine
International Paper Co.	Webster	Orono, Me.
International Paper Co.	Winnipiseogee	Franklin, N. H.
*Jonquiere Pulp Co., Ltd.	Jonquiere	P. Q., Canada
*Lawrence Paper Mfg. Co.	Container Board	Lawrence, Kans.
Lowe Paper Co.	Ridgefield	New Jersey
*Marathon Paper Mills Co.	Ashland	Wisconsin
Marinette & Menominee Paper Co.	Menominee	Michigan
*Monroe Paper Prods. Co.	Monroe	Michigan
*New York & Penn. Co., Inc.	Champlain	Willsboro, N. Y.
Northwest Paper Co.	Frederick	Brainerd, Minn.
Port Huron Sulphite & Paper Co.	No. 1	Port Huron, Mich.
Port Huron Sulphite & Paper Co.	No. 2	Port Huron, Mich.
Sorg-Oglesby-Smith P. Co.	Sorg	Middletown, O.
Sorg-Oglesby-Smith P. Co.	Oglesby	Middletown, O.
Sorg-Oglesby-Smith P. Co.	Smith	Middletown, O.
*Thilmany P. & P. Co.	Sulphate	Kaukauna, Wis.
*Thilmany P. & P. Co.	Wis. Tissue Div.	Appleton, Wis.
Union Bag & Paper Corp.	No. 5	Hudson Falls, N. Y.
Union Bag & Paper Corp.	Allen	Hudson Falls, N. Y.
Union Bag & Paper Corp.	Fenimore	Hudson Falls, N. Y.
U. S. Gypsum Co.	Gypsum	Ohio
U. S. Gypsum Co.	Lancaster	Ohio
U. S. Gypsum Co.	No. Kansas City	Missouri
U. S. Gypsum Co.	Oakfield	New York
*Wardlow-Thomas Paper Co.	Middletown	Ohio

*Mills that were not in the 1929 Contest.

Feb. 12—Powell River, B. C.
Pacific Coast Safety Conference.

Feb. 26—New York City.
First Regional Safety Conference.

March 18—Chicago, Ill.
Mid-West Safety Conference.

March 24 and 25—Kansas City, Mo.
Central States Safety Conference.

April 15—Newark, N. J.
Eastern Safety Conference.

April 30 and May 1—Boston, Mass.
Massachusetts Safety Conference.

Container Corp. Holds Intra-Mill Contests

The Container Corporation of America, Chicago, has just entered upon its second season of intra-mill safety contests. During 1929, the contests were run separately, one contest for the paper mills and one for the box factories. To sustain interest during a long twelve-month period, the contest was broken into quarterly periods. At the end of each quarter, banners were awarded to the plant having the best record for that three-month period.

Briefly, the plan used by this company offers any division which works one year without a lost time accident, or works 300,000 man hours consecutively, without a lost time accident, a shield for their permanent possession. The Charleston and Fairmont Divisions qualified for this trophy the first year it was offered.

The Container Corporation feels that the interest which was brought to a head by this effort strengthened each and every plant in their fundamental knowledge of accident prevention work. The immediate results of the 1929 efforts were perfect scores by the Box Plants at Charleston, W. Va., and Fairmont, W. Va., respectively. In addition, the paper mills reduced their rate of lost time injuries under that of the year 1928 by 52.8 per cent. The Box Plants had a similar reduction in their frequency rate of 39.3 per cent.

Warren Curtis

Warren Curtis, 54 years old, president of the Ontario Paper company of Niagara Falls, N. Y., and of the Tonawanda Paper company of North Tonawanda, N. Y., subsidiaries of The Chicago Tribune, died January 29, at his home in Lewiston Heights, near Niagara Falls. Mr. Curtis had been in ill health for the last two years, but had been critically ill only for a few weeks, having returned recently from Orlando, Fla., where he had gone for his health.

Mr. Curtis was an outstanding figure in the paper manufacturing industry. He had been brought up in the paper business by his father, the late Warren Curtis, former head and one of the founders of the International Paper company. Mr. Curtis, himself, was identified with the companies which were later merged to form the International, before he took over the organization of the Ontario and Tonawanda companies, which he had headed since their inception nearly twenty years ago.

He was born in Corinth, N. Y., where his family had lived for many years and for a time attended Rensselaer Polytechnic institute in Troy, N. Y., leaving school to enter the paper business. He is survived by his widow, Mrs. Madelaine A. Curtis, of Lewiston Heights; his mother, Mrs. Margaret A. Curtis; one brother, Allen, vice president of the International Paper company, and two sisters.

I. P. Co. Reduces Accidents

Record of Company's Accident Experience and Nursing Service in 1929

THE accompanying tables and charts illustrate the number, cause, and character of accidents in paper, pulp and bag mill operations in the mills of the International Paper Co. and the Continental Paper and Bag Corporation, for the past year not including the Southern Division, Riordan mills or the Ticonderoga Pulp and Paper Co. The tables covering the 1928 records of the International mills were published in the February, 1929 issue of THE PAPER INDUSTRY. Comparison is not practical with the Continental Division as this is their first complete year under this system.

The original mills made a particularly fine showing with a total of 238 lost time accidents, breaking the best previous record of 255 in 1928, notwithstanding an increase of over 13 per cent in full time employees.

The accompanying tables include all mills listed, showing the general conditions under which accidents occurred, nature of the injury and the occupations followed. This is chartered in Table 1 by individual units. Table 2 presents this same information in graphic or bar chart form.

Table 3, Plant and Community Nursing Service, shows in

INTERNATIONAL PAPER COMPANY AND CONTINENTAL PAPER & BAG CORPORATION
INDUSTRIAL BUREAU

ANALYSIS OF LOST TIME ACCIDENTS

FOR YEAR ENDING DEC. 31, 1929
TOTAL - 377

TABLE 1

YEAR - 1929 OCCUPATION	RUMFORD PAPER	PARK	MENOMINEE	OCONTO FALLS	ASHLAND	WATERTOWN	GREENWICH	YORK HAVEN	BROOKLYN	OTTAWA	RUMFORD BAG	VICTORY	BASTROP	2	3	4	5	6	9	10	13	14	16	17	21	32	TOTAL
2-3 WOOD HANDLING	2	1	0	0	0	1	0	0	0	0	0	0	0	0	4	1	2	0	0	1	0	0	9	1	15	3	40
4-4A WOOD ROOM	4	1	0	0	0	0	0	2	0	0	0	0	0	0	2	0	2	0	0	0	1	0	1	0	3	0	16
5-6-7-7A GROUND WOOD	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	2	3	0	0	0	2	0	6	0	0	7	23
8-9-10-11-11A SULPHITE	2	1	0	5	0	1	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	3	0	15
12 BEATERS	3	1	0	0	1	0	0	1	0	0	0	0	0	4	2	2	2	0	0	0	0	2	0	0	0	0	18
13 PAPER MACHINES	15	0	0	3	5	4	0	5	0	0	0	0	0	7	3	3	4	4	0	2	1	4	8	0	5	8	81
13C BAG MACHINES									1	2	4	0	4														11
14-15A FINISH & PAPER HLDG.	3	1	0	0	2	4	0	1	0	2	3	1	1	3	1	0	3	2	0	0	0	2	3	0	3	0	35
15 INDOOR MISC.	3	0	0	3	2	2	0	1	2	4	2	1	0	2	0	0	1	6	1	0	0	0	1	0	1	1	33
16 OUTDOOR MISC.	1	1	0	3	0	0	0	1	0	0	0	0	0	4	2	0	2	0	0	0	4	0	0	1	3	2	26
17 POWER PLANT STEAM	0	0	0	3	0	0	0	1	0	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	2	9
17A POWER PLANT ELEC.	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0	1	0	5
18 REPAIRS	3	0	1	5	1	1	0	0	1	4	0	0	0	8	5	0	2	2	1	0	0	2	10	1	12	1	62
18-19A OFFICE	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
TOTAL	37	7	1	24	11	13	0	13	4	13	9	2	5	33	22	10	21	16	2	3	8	10	40	3	46	24	377
DESCRIPTION OF INJURY																											
A AMPUTATIONS	4	0	0	1	0	0	0	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0	1	0	2	1	12
B CUTS, BRUISES & LAC.	14	0	0	9	7	5	0	6	3	6	4	1	2	15	4	1	11	7	0	1	4	5	18	1	21	13	138
C BREAKS & FRACTURES	10	3	1	1	0	1	0	3	1	1	1	1	1	4	6	4	6	3	1	1	2	2	8	1	8	2	73
D SPRAINS & STRAINS	6	2	0	2	1	6	0	4	0	4	1	0	0	7	3	2	3	2	1	0	2	1	2	0	4	6	59
E BURNS & SCALDS	0	1	0	3	1	0	0	0	0	0	0	0	0	3	6	0	0	1	0	0	0	1	5	0	3	1	31
F EYES	0	0	0	1	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	1	0	0	1	0	4	0	10
G HERNIA	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	3	0	0	0	1	1	0	1	0	9
H INFECTIONS	3	0	0	1	2	1	0	0	0	1	1	0	2	1	1	1	0	0	0	0	0	0	2	1	2	0	19
I FATAL	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	0	5
J MISCELLEANEOUS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
TOTAL	37	7	1	24	11	13	0	13	4	13	9	2	5	33	22	10	21	16	2	3	8	10	40	3	46	24	377
CAUSES OF ACCIDENTS																											
A PRIME MOVERS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B POWER TRANS.	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
C POWER WORKING MCHY.	13	1	0	2	4	1	0	1	3	3	5	1	3	4	1	3	4	3	0	0	2	3	2	1	8	7	75
D MAN. OPR. MACHINES	2	0	0	0	1	0	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	8
E HOISTING APPARATUS	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	3
F VEHICLES	0	0	0	1	1	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	2	0	5	0	12
G HOT SUBSTANCES	0	1	0	7	0	0	0	0	0	0	0	0	0	1	4	0	0	1	0	0	0	0	4	0	0	0	18
GA ELECTRICITY	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	0	0	0	0	0	0	2	0	3	0	9
H POISONOUS SUBSTANCES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
I FALLS OF PERSONS	6	0	0	3	0	3	0	1	0	1	0	0	0	8	4	3	7	5	0	1	4	1	1	0	6	3	57
J FALLING OBJECTS	6	1	0	1	1	1	0	2	0	1	0	0	0	1	3	0	2	0	0	1	1	0	6	0	6	1	34
K HANDLING OBJECTS	9	4	1	6	3	8	0	6	1	5	3	1	1	17	6	4	7	6	2	1	1	3	20	2	17	10	148
L MISCELLEANEOUS	1	0	0	1	1	0	0	1	0	1	1	0	0	0	1	0	0	1	0	0	0	0	1	0	3	3	14
TOTAL	37	7	1	24	11	13	0	13	4	13	9	2	5	33	22	10	21	16	2	3	8	10	40	3	46	24	377

condensed form the activities of the company's nursing service both in attention to first aid and industrial accident work at the plants and the homes of injured employees, as well as what is being done to promote health in the community by nursing attendance to employees and their families suffering from other disabilities as well as industrial accidents. A substantial increase in activities over the previous year is shown.

In concluding the company's report for the year, John Lundrigan, industrial superintendent, has given the following advice:

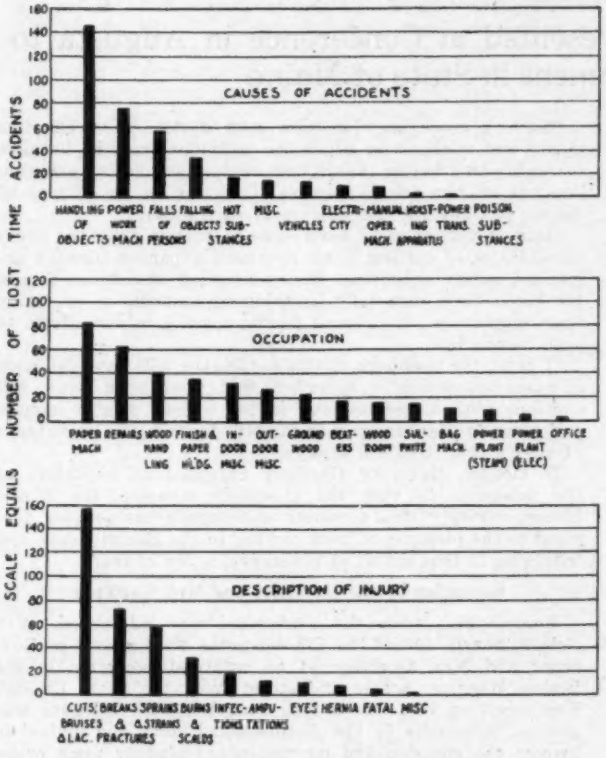
"All successful industrial experience including proper contact and relation between employer and employed, of which the prevention and care of accidents is an important part, must develop and filter from the top down; always calling for participation and co-operation from every branch and element of service, but it must have personally interested leadership by and through the head man on the job.

"He is obviously interested in costs and if we will keep in mind that resulting damage to property, interruption of operation, lessening of employees morale, breaking in of new employees are all just as much accident costs as is the legal, compensation and medical care paid, which according to the best actuarial information available, multiplies such cost fourfold, he will realize that personal attention to this subject not only keeps management in closer touch with employees, but provides a direct method of cost control."

ANALYSIS OF LOST TIME ACCIDENTS

FOR YEAR ENDING DEC. 31 1929.

TOTAL = 377 TABLE 2



PLANT AND COMMUNITY NURSING SERVICE
SUMMARY OF ALL MILLS AND NEW YORK OFFICE YEAR 1929

INTERNATIONAL PAPER COMPANY

Mills	First Aid Room			Community Nursing Service		
	Dressings Mill Accident Cases	Redressings Mill Accident Cases	Treatments other than Mill Accident Cases	Visits to Mill Accident Cases	Visits to Disabled Employees & Families	Total Duties in Mills and Communities
Fort Edward	1291	1361	3150	134	1146	7082
Hudson River	1265	1481	1190	144	2179	6259
Otis Division	1979	2215	3203	14	2762	10173
Glen	679	1508	1495	116	3338	7136
Niagara Falls	1895	2141	4156	247	2643	10992
Webster	728	178	955	8	1887	3756
(Montague	455	796	1030	71	1821	4163
(Montague Mach. Co.	47	188	140	21	277	673
(Lake George	292	794	956	50	750	2842
(Ti. Pulp & Paper	1158	3400	5500	193	3891	14142
Three Rivers	1343	3150	400	198	3205	8296
Piercefield	245	1655	2931	–	1792	6623
(Gatineau	1636	4830	915	572	3617	11570
(Int. Fibre Board Lt.	48	102	–	–	17	167
DeGrasse	1331	2081	1394	–	1267	6073
Southern Int'l Div.						
Camden	282	653	672	61	471	2140
(Bastrop	462	586	577	41	41	1707
(Louisiana	99	219	7	43	20	388
Mobile	37	184	24	1	1	247
Totals 1929	15183	27522	28605	1914	31125	104439
1928	13377	21568	26261	1209	30270	92685
Increase	1806	5954	2434	705	855	1754
Decrease						
Rumford-Cont. P.& Bg. Corp.	554	119	704	59	347	2583
Dalhousie Const. Co.	674	1083	7	–	–	1764
Med. Dept. N.Y. Office	101	157	976	20	–	1254
Grand Total–1929						110040
Grand Total–1928						97961
Increase						13079

Continental Mills other than Rumford not included.

Syracuse May Have New Forestry Building

The announcement of an appropriation of $600,000 in the Governor's budget for a new forestry building at Syracuse was made January 11 at the banquet given by the Board of Trustees of the Syracuse University to the faculty at the Onondaga Hotel.

It is a bit of irony that this announcement should come three months after the death of Dean Moon who had worked and planned many years for this much needed addition to the College plant. It was one of his ambitious dreams that a science building should be erected to relieve the congestion that has been a handicap many years through the lack of room in the present building for laboratories and adequate classrooms. Students applying for admission to the Forestry College have been turned away regularly every year due primarily to the lack of facilities and a lack of large enough teaching staff. It is hoped that the new building and further appropriations will surmount these obstacles and make for the fulfillment of the destiny of forest education in the State of New York.

Last year tentative plans for this building were drawn by Prof. Cox and were discussed by the faculty under the direction of Dean Moon. The plans were sent to the State architect and while the original provisions will probably be altered, the general idea will stand practically as Dean Moon, Professor Cox and the faculty originally intended. The structure will be located near the southwest corner of the present College. The front of the building will face the stadium.

Austin Co. Inaugurates Electric Welding Service

In connection with the general expansion program of The Austin Co., international firm of designers and builders, George A. Bryant, Jr., executive vice president and general sales manager, announces the appointment of Ralph Leavenworth as assistant general sales manager. Leavenworth will have contact with sales activities at the headquarters office at Cleveland and the various branch offices throughout the country.

Prior to joining the Austin staff, Leavenworth was secretary and account executive of Paul Teas, Inc., advertising agency. He was account executive for The Austin Co.

Another phase of the expansion program of The Austin Co. was seen in the recent announcement that it is inaugurating noiseless construction of industrial and commercial building with the electric welding of structural steel as a regular part of its service. The company will make welding or riveting optional with the owner. This is the first time in the history of the American building industry that electric welding has been offered as a practical proposition. Expansion of 50 per cent in the company's fabricating plant facilities is involved.

Paper and Pulp Engineers Lead at Maine's Annual Safety Meeting

Leading Industries of the State Represented at Conference in Augusta to Forward Safety Movement in State of Maine

WELCOMED by the Hon. Wm. Tudor Gardiner, Governor of the State, who afterwards gave a reception for the delegates in the executive mansion, the Industrial Safety Conference of the State of Maine, made up of delegates from co-operating organizations composed of the Maine Department of Labor and Industry, Associated Industries of Maine, Paper and Pulp Section of the National Safety Council and American Society of Safety Engineers, met on Wednesday, January 22, in second annual session in the senate chamber of the State House, Augusta, under the chairmanship of Thomas G. Mangan, general manager of the Otis division of International Paper Company, Livermore Falls, Me., and put through a notable and highly constructive program of papers and discussions, including a series of recommendations to the legislature for the establishment of a state bureau of safety under the Commissioner of Labor and Safety.

The recommendations, as proposed by Alvin F. Record, safety supervisor of the mills at Livermore Falls and Riley, Me., on behalf of the Governor's state safety committee, and adopted by the convention, were worded as follows:

Recommendations to the Legislature

1—That through an act of legislature there be included in the Department of Labor, and under the supervision of the Commissioner of Labor, a bureau of safety, headed by a trained safety engineer, with an industrial safety committee acting in an advisory capacity.

2—That an appropriation be asked for financing this work.

3—That a plan be formulated to protect employees in the smaller industries which do not come under the provisions of our Maine labor laws.

4—That safety codes be drawn up covering guarding and safe practices for each of our industries, the same to be incorporated in our Maine labor laws.

5—That a copy of these recommendations be handed to the Governor and Council for their information.

6—That this industrial group, or a similar group be appointed and instructed to meet with the Legislative Committee to give them such advice and information on the subject as may be necessary to insure its being enacted into the laws of Maine.

The convention was called to order by Judge Benjamin F. Cleaves, Portland, who introduced Governor William Tudor Gardiner and afterwards called upon Thomas G. Mangan to take the general chairmanship of the meeting.

Governor Gardiner's Welcoming Address

Governor Gardiner began his welcoming address with an expression of pleasure at the size of the attendance which, he said, was gratifying to all interested in safety work. The senate chamber was comfortably filled with representatives of the building trades, lumbering and saw mills, public utilities, shipbuilding, shoe manufacturing, woodworking and woolen industries, in addition to pulp and paper manufacturing.

Safety, Governor Gardiner said, was becoming more and more a problem for study, now that speed is taking its place as a symbol of the era in which we live.

Safety Organizations a Necessity

"Safety organizations have become a necessity, more so than ever in history," he said. "The percentage of fatal accidents among our own 90,000 industrial employees in Maine is too high. The loss of nearly one life a week, on an average, is costly to our homes and to our industries.

"Such a conference as this may devise more effective means and methods by which the individual may be brought to realize that better than 90 per cent of any safety program depends on him for its success. It is for us, as citizens of Maine, to think for the welfare of each other.

"Our industrial units have come to realize fully the great possibilities of cutting down overhead expenses through organized safety activities. Encouragement in various forms, the bonus form especially, is bringing material co-operation from employees. We cannot be too sparing in our efforts to save human life.

"I trust the members of this conference will have the wide co-operation which is deserved, that your good work will continue with added impetus in the coming twelve months and serve to impress upon us all, still further, the importance of safety first, last and always."

In closing, Governor Gardiner extended an invitation to the delegates to visit the executive mansion, the Blaine House, saying, "Mrs. Gardiner and myself are looking forward to the pleasure of your coming to the Blaine House and indulging in that safest of beverages, a cup of tea."

Reception by the Governor and Mrs. Gardiner

Accordingly, when the conference was adjourned, at 5 o'clock, nearly 100 of the 135 delegates were guests of Governor and Mrs. Gardiner at an informal reception in the Blaine Mansion, across the street from the State Capitol. The receiving line was a long one, but each delegate was greeted personally by the distinguished hosts and invited to inspect the mansion and its contents, including some priceless State treasures, such as the study, desk and bookshelves of the late U. S. Senator James G. Blaine, and the beautiful silver service that was recovered from the wreck of the U.S.S. Maine in Havana harbor. Tea and cake were served to a most appreciative group of visitors who were charmed by the warmth of welcome and the courtesies shown to them by the Governor and Mrs. Gardiner.

Proceedings of the Conference

In assuming the chairmanship of the proceedings, Mr. Mangan outlined the purpose of the meeting, which, he said, was for an interchange of ideas and advice in order to effect, still further, the prevention of loss and injury from avoidable accidents in the State of Maine. He gave figures in explanation of economic reasons for developing safety measures, saying that with 16,000 lost time accidents in industry there was an expense of $1,000,000 for medical attendance alone, and this bore a 4 to 1 ratio to direct costs, which amounted to $5,000,000. As against a rising accident experience throughout the country as a whole, there were firms, who employ safety methods, reporting a decrease of 90 per cent in expenses. However, Mr. Mangan said, he did not care to elaborate on that as there were experts in accident prevention present who would be heard from. He then introduced J. H. Harvey, manager of the New York City branch of the National Safety Council, who was on the program for an address on

Organizing for Industrial Safety

Mr. Harvey said it was a bad habit on the escutcheon of the country when he had to admit that there was an increase of 4,000 motor accidents in 1929. The topic to be considered was similar to that which was discussed by him last year and some repetition was necessary. There was no hope for accident prevention without organization within the plant providing for safety engineering, education and enforcement.

There were many intangible factors in safety work, but the three principles named were fundamental and should be brought into play. In the plant some one person should be made definitely responsible for education in safe practices. An excellent plan for stimulating the interest of employees was to start interdepartmental contests in which safety results in one department could be compared with the results in another department. But everything gets old and new plans must be devised. In the case of bulletin boards some are useless because they are not changed often enough. Messages from managers to men should be displayed at frequent intervals, and no matter how good the record has become, you must keep everlastingly at it. Safety committees were capable of excellent work and the best results were obtained, a better response comes from the rank and file, when one of their number is represented on such a committee.

Mr. Harvey cited instances which went to prove the need of a general awakening of interest in safety work. Thus, in the Hawthorn plant of the Western Electric Company, Chicago, it was found that 2.2 days were lost from accidents outside of the plant as against 1 day inside the plant; 16 men were killed outside of the job and 12 men on the job.

He said he hoped that he would soon see a state safety committee organized in every State of the Union. He urged the delegates present to take more interest in what was being done in the schools to inculcate safety or accident prevention among young people.

In closing, Mr. Harvey counselled those present to consider the National Safety Council as their own association and to call upon it for information or advice when needed.

Information About Safety Methods

Chairman Mangan invited discussion and Judge Cleaves asked if it might not be a good thing to prepare a pamphlet of safety information for distribution among firms who were not in a position to employ a safety engineer. This brought a response from Mr. Harvey who said that this was what the National Safety Council was organized to do. He added that the Massachusetts Safety Council was now conducting a State Safety Contest.

Mr. Pendleton gave an explanation of the state-wide safety contest which was carried on in Massachusetts by 330 corporations. Various committees were formed and each group leader was awarded a banner for conspicuous merit during the year.

Judge Cleaves said there should be a committee of that kind in the State of Maine to be supported at public expense for the assembly and dissemination of safety information and he believed the Department of Labor would be the best agency for the purpose. He added that Commissioner Beals had assembled reports of accidents but had not been allowed to employ a statistician.

Favored by Commissioner Beals

Charles O. Beals, Commissioner of Labor, got the floor at this point to say that in the twenty-one days since January 1, a total of 409 accidents had been reported in the State, including one fatal accident. Commissioner Beals said he was convinced that work of the kind proposed would be of incalculable benefit to the citizens of the State.

The Economic Basis of Safety Work

Frank Morris, assistant chief engineer of the Liberty Mutual Insurance Company, Boston, was the next speaker. He read from a prepared paper entitled "Let's Be Engineers," but introduced the topic with a few humorous definitions of the term "expert." Thus, "an expert is only an ordinary man away from home"; and, "a man who studies more and more and learns less and less." He referred to the thousands and thousands of radio stations that were hooked up to receive the speech of King George at the opening of the Naval Parley in London, and asked if it had occurred to those who listened in that they had heard the speech before it was heard in the House of Lords. "Why can't we look forward to a time," he said, "when we will not only have nation-wide, but world-wide interest in safety work?"

Mr. Morris cited some of the statistics bearing on the returns from money invested in accident prevention, in proof of the statement that there was an economic basis on which to stand rather than an emotional one.

Production Costs Reduced

"The Norton Company expended in 1922, $17,456 for accidents; in 1926 this figure had been reduced to $1,535, less than one-tenth of the former annual cost. Over a ten-year period for every $9.70 spent by the Steel Corporation on safety they got $14.60 back. It is true that probably 40,000 serious injuries and 250,000 minor injuries were averted by them in that period, but why need we as engineers drag in the emotional appeal when we are talking about a 50 per cent interest return on the investment. I say this company spent $9,700,000 in ten years and got $14,600,000 back—a 50 per cent interest on $9.70 is $4.85 and add these and you have $14.55. Safety work isn't wildcat oil, or blue sky, or gold plated brick—it's a bona-fide business investment.

"So, let us talk more about 'the reduction in the unit cost of production' and less about spilled blood and cracked bones."

Chairman Mangan opened the discussion of Mr. Morris' paper by declaring that he was not a safety engineer but an executive and he was opposed to discussing any question of reduction in the unit cost of production with individual workmen.

Walter J. Brennan, safety supervisor of St. Croix Paper Company, Woodlands, Me., said it was necessary for safety engineers to be two-sided in handling the subject. Approach the executive with a slide rule for a demonstration of the benefits of safety measures and the men in the mill with an appeal to their own appreciation of the suffering and loss consequent on neglect of safety precautions. In his own plant it was forbidden to refer to the savings effected. He urged that safety men should present one side to the management, the one brought out by Mr. Morris; and the blood, the crutch and the splint to the men, not reduction of the unit cost of production.

Saving Life by Artificial Respiration

Chairman Mangan called for the item on the program, which was a "Demonstration of Artificial Resuscitation" by E. P. Noyes, of the Central Maine Power Company, Augusta, Me.

By means of a wide glass jar the bottom of which had been knocked out and replaced by a sheet of thin rubber, he showed what takes place in the chest cavity when air is inhaled and expelled. Into the neck of the bottle was fitted a glass tube having a small rubber balloon at the end of which penetrated the jar. When air was blown through the tube the balloon became inflated and made the rubber diaphragm below swell out. The balloon represented the lungs, the bottle the chest cavity and the rubber diaphragm, the human diaphragm.

Mr. Noyes called for a volunteer from the audience on whom he could demonstrate the prone pressure method of artificial respiration, the principle of which had been illustrated by him with the glass jar, rubber diaphragm and balloon. One of the audience came forward and allowed himself to be manipulated by Mr. Noyes according to approved rules, and the demonstration was heightened in interest when two other volunteers were taught how to operate on each other to make forced inhalation and exhalation of air into and from the lungs. Copies of a booklet containing the rules and illustrations of procedures for resuscitation of the apparently dead by the prone pressure method of artificial respiration was distributed to all in attendance. Supplies of the booklet for use in the industries can be obtained from the National Electric Light Association, 420 Lexington Avenue, New York City.

This concluded the business of the forenoon sitting when all adjourned to the Augusta House for luncheon. Near the close of the meal, Judge Cleaves, who acted as toastmaster, introduced Ignatius McNulty, safety supervisor of the American Woolen Company, Boston, who delighted the gathering with Scotch stories, followed by an eloquent address on the position of the safety engineer in the industrial world.

AFTERNOON SITTING

In introducing Walter J. Brennan, safety supervisor, St. Croix Paper Company, Woodlands, Me., at the afternoon sit-

ting which opened at 2:40 p.m., Chairman Mangan remarked that he belonged to an organization that had won two first prizes of the National Safety Council. The subject of Mr. Brennan's paper was "Hazards of Handling Materials" and he gave a most informing account of the causes, prevention and remedies of and for the accidents and injuries common to the operation of a newsprint mill.

Dust Hazards

After giving details of the hazards involved in the lifting of weights by hand in which he displayed an intimate knowledge of the bones and muscles engaged in lifting operations, Mr. Brennan spoke of the dust hazards connected with the handling of bulky substances, like sulphur and coal, as well as those encountered in the cleaning of boiler tubes and the work of running sanders which involved injury to lungs, irritation of the eyes and fire from dust explosion. As a safety device, the use of respirators was recommended. Those in use at the mill with which he is connected have filter chambers so arranged as to make it possible to insert from one to a dozen filter disks, depending upon the job. He said that these, together with goggles, made for complete protection and satisfaction.

A Unique Sulphur Explosion

Mr. Brennan told of a unique dust explosion in which sulphur was the agent. Sulphur was being unloaded, he said, and dust filled the air. Iron plates covered several hatches opening into different bins. It became necessary to cover one hatch and open another. A man was sent down to that level, some ten feet below, on a short ladder. A rope was fastened around the iron plate and orders given to hoist, guiding it up the ladder. It slipped off, striking the concrete wall as it swung. A spark from the impact set fire to the dust, the ladder fell down and a man was trapped in the area. Flames poured up through the opening so that the crew could not assist. A real thinking foreman arose to the emergency and told him to jump into the bins below. The poor fellow was fished out of the bins alive only to die a year later from pneumonia induced by damaged lung tissue.

Use of Blowers

The employment of blowers or exhausters was recommended for removing dust as it was formed. At Norton Company, Worcester, Mass., emery wheels are surfaced by grinding one on another. The room formerly was foggy with the microscopic particles of carborundum dust, and men worked there only at a premium. The safety engineer now exhausts the dust and later catches it for the manufacture of the very finest abrasive wheels such as are used by watchmakers.

Mr. Brennan instanced numerous other hazards connected with the handling of coal and similar bulky materials and pointed out means for preventing accidents. He mentioned a hazard connected with loading platforms and indicated a safeguard, as follows:

Loading Platform Hazards

"Loading platforms are invariably a little higher or lower than the body of a truck or the floor of a freight car. Often, too, the clearance is considerable between freight car sills and loading platform edge. By necessity this gap must be bridged with some sort of a runway; iron plate, heavy wooden skid or merely a few loose planks. Only rarely do we see a well engineered runway. The hazard, of course, is the danger that one end or the other of this runway may slide under the impact of the truck wheels, and that the trucker and his load will be precipitated into the space between the car and the platform. The best remedy is to use sturdy iron plates or oak runways, the edges of which have been perforated with numerous holes close together. Attached to these runways by chains should be four bolts, long, sturdy and exactly fitting the holes in the edge; two of these bolts to be inserted in holes just clearing the platform edge, the other two inserted to just clear the frame of the car.

"Whichever way the truck's impact, any motion of the runway will be snubbed by the protruding bolts. Perhaps the finest arrangement is the equipping of the platform edge with an angle iron; the runway having on its under side two angle irons the clearance being but slightly greater than the thickness of the angle iron stock. The runway is fitted over the vertical face of the angle iron on platforms, the trough formed by the two angles attached to runway holding it securely, and eliminating the need of any fastening on the car end."

The hazards of power trucking were dealt within Mr. Brennan's paper, and there was a useful description of mechanical aids to material handling, with especial reference to the dangers of faulty chains. A periodic inspection of all chains and tackle used in material handling was earnestly advocated.

Useful hints were given on the avoidance of accidents in the operation of monorails and of air hoists. The many hazards connected with the use of conveyors also received attention, advice and suggestion being given as to making them safe or anticipating accidents.

In closing his paper, Mr. Brennan asked his hearers not to forget that they were pioneers in Maine's industrial and public safety endeavors. "Led by his Excellency the Governor, the Commissioner of Labor and your employers we can go far toward a realization of hopes."

Punishment for Disobeying Orders

In discussing the paper, one of the delegates asked Mr. Brennan what he would do with a man who disobeyed safety orders and rules. His reply was to "lay him off" for a few days. The loss of pay would bring him to his senses. In the event of a foreman disobeying orders, "break him." If the company will stand by and give proper support in maintaining discipline, safety could be made to go, but not otherwise.

Getting the Injured Man Back on the Job

Dr. James C. Graves, Jr., director of industrial surgery of the Travelers Insurance Company, Hartford, Conn., was the next speaker.

Dr. Graves gave it as his opinion that anything which encourages an injured person to learn what he can, even though partially disabled, has an important economic effect, as it relieves society in whole or in part of the necessity of supporting a person, and in many instances his family. By cooperation with safety engineers, foreman and other officials employers may often be able to give an injured worker a temporary change of work which will keep him on the job until he is able to resume regular duties. The opinion was expressed that the average employer does not stop to analyze just how important it is to get an injured employee back on the job in the shortest possible time and with the least possible resulting disability.

Governor's Safety Committee Reports

Alvin F. Record was called upon at this stage of the proceedings to present the report of the Governor's safety committee, of which he is a member. After reviewing the work of the committee since the State Safety Conference in 1928 and their efforts to get financial aid for their efforts from the manufacturing interests in the State. The committee had circularized the industries of the State but, while not discouraging, the results did not offer sufficient funds to warrant the committee in employing a manager. The majority of replies favored the idea of making it a state financial and controlled plan, available to all industries in the State, both great and small. In consequence, the industrial group of the Governor's safety committee presented a series of recommendations, the text of which, as adopted by the conference, is reproduced in the opening paragraphs of this account of the meeting.

Mr. Record reviewed each of the recommendations made and gave reasons for their adoption, following which they were formally adopted by the conference.

The conference closed with a round table discussion, led by Ignatius McNulty, safety supervisor of the American Woolen Company, Boston, which developed some interesting observations concerning the infrequency of accidents to women as compared with men, the susceptibility of men to accidents being reported as seven times more than a woman. This was attributed to the inherent caution in a woman as the mother

of the race as well as to her inability to do more than one thing at a time.

Mr. Davies, labor commissioner of New Hampshire, did not wholly agree with this. It was well-known, said he, that women in textile factories were not exposed to the same hazards as men.

Judge Cleaves found an explanation for the lessened susceptibility of women to industrial accidents in the fact that women are taught from early childhood to use their hands and so become agile. More than this, women were gifted with intuition in a higher degree than men and become more aware of impending danger.

Judge Cleaves showed a profound sense of humor and some of his remarks, ironical and otherwise, brought smiles at times to an appreciative audience. To point his observations on the superior watchfulness of women he told a story.

A man in a railroad car, the story ran, stopped reading his newspaper to call his neighbor's attention to an item about something that could be hung on a man's arm and tell when he was lying. "Can you imagine anything like that," said he to his companion. "Why of course, I can," was the response, "I married one of them!"

Paper Men in Attendance

Pulp and paper firms represented at the second annual industrial safety conference of the State of Maine included the following:

Continental Paper and Bag Corporation, Rumford, Me.—Frank Garrigan, Edward L. McManus, Park Mathison, L. H. Reed.

Cushnoc Paper Corporation, Augusta, Me.—F. C. Bagley, Jr., J. O. Bedell, K. A. Hultan.

Fraser Companies, Ltd., Edmunston, N. B., Canada—L. P. Sirois.

Fraser Paper, Ltd., Madawaska, Me.—James Reith.

Great Northern Paper Company, Millinocket, Me.—C. S. Cobb, C. B. Stanwood.

Hollingsworth & Vose Company, Boston, Mass.—Nat. G. Bartlett.

Hollingsworth & Whitney Company, Waterville, Me.—Arthur E. Winslow.

International Paper Company, Livermore Falls, Me.—George J. Adams (New York office), Martin Burke, Herbert Cockun, W. E. P. Fullam, George G. Gibbs (Glen Mill, Berlin, N. H.), Thomas G. Mangan, John E. Murray, Clarence H. O'Connell (New York office), Alvin F. Record.

Keyes Fibre Company, Inc., Waterville, Me.—Herbert J. Desmond.

Oxford Paper Company, Rumford, Me.—H. G. Gilson, E. Sarle, Carl Thurston, Robert Wishart, A. Zinc.

Rogers Fibre Company, Kennebunk, Me.—Elliott Freeman.

St. Croix Paper Company, Woodlands, Me.—Walter J. Brennan, F. L. Irwin.

S. D. Warren Company, Cumberland Mills, Me.—Edward L. Lincoln.

Junior Paper Technologist

The United States Civil Service Commission has announced an open competitive examination for junior paper technologist. Applications must be on file with the Civil Service Commission at Washington, D. C., not later than April 8.

The examination is to fill vacancies in the Bureau of Standards, Department of Commerce; in the Geological Survey, Department of the Interior, and in positions requiring similar qualifications, for duty in Washington, D. C., or in the field.

The entrance salary is $2,000 a year. Higher-salaried positions are filled through promotion.

Competitors will be rated on general chemistry, elementary physics, and mathematics up to and including calculus; and practical questions on paper technology.

Full information may be obtained from the United States Civil Service Commission at Washington, D. C., or the Secretary of the United States Civil Service Board of Examiners at the post office or custom house in any city.

Third All-Ohio Safety Congress

Prominent Speakers and Large Attendance Features of Safety Meeting Planned by State Division of Safety and Hygiene

INCREASED interest in the safety movement among pulp and paper manufacturers was evidenced at the Third All-Ohio Safety Congress, held at the Neil House, Columbus, Ohio, January 14 to 16, under the direction of the Division of Safety and Hygiene of the Ohio Industrial Commission, in collaboration with the National Safety Council. The attendance at the third conference was far in excess of the previous ones, and, on the whole, more interest was manifested in the meetings.

The conference opened with welcome addresses, following which C. E. Pettibone, president of the National Safety Council and vice president of the American Mutual Liability Insurance Company of Boston, spoke on "National Safety." Mr. Pettibone gave a most interesting talk in which he outlined the basic principles of safety work in industrial and mercantile establishments. He was followed by Isaiah Hale, safety superintendent of the Santa Fe Railroad, Topeka, Kans., who spoke on "Safety Inspiration."

Paper and Pulp Section

Following the general session, group meetings were held by the various sections. Harry M. Hiers of the Ohio Boxboard Co., Pittman, Ohio, was chairman of the Paper and Pulp Section which was well attended.

Enthusiasm and the Human Element

L. R. Wendt, assistant secretary-treasurer of the Hinde & Dauch Company, Sandusky, Ohio, spoke at length on safety as carried out in the various plants of that company, taking for his subject "Enthusiasm and the Human Element in Safety Work." Mr. Wendt outlined the experience of his company where accidents continued to occur after everything had been done to provide proper guards and other safety appliances. This continued until the employees were taught to think and act in terms of safety. Mr. Wendt figured that 15 per cent of the accidents which are mechanical could be taken care of by guards, but the other 85 per cent resulted from ignorance, carelessness or lack of interest on the part of the employee.

The speaker related how his company had become enthusiastic on the matter of safety and laid out a program which consisted of (1) problems of engineering which included the study of accidents, their causes and the method of guarding against them; (2) educating the employee to think and act in terms of safety; (3) enforcing the observance of safe practices.

Meetings were held at all plants and a plan instituted of giving cash prizes each month for the best safety slogans. This plan received excellent response; in fact, practically 100 per cent of the employees of the St. Louis plant enter the contest monthly. The results of this campaign have been to reduce the accident rate enormously.

The Human Factor

Speaking on safety work in his plants, N. H. Bergstrom, treasurer of the Bergstrom Paper Co., Neenah, Wis., emphasized the human factor in accident prevention work in his plants. He stressed the importance of proper environment, which is one of the major elements in the character molding of a man. The physical wants of the worker must be taken care of which results in greater safety and contentment. Mr. Bergstrom spoke of conditions in their plant such as clean locker rooms, hot and cold water. The company invested $8,000 to install these things and it costs $200 per month to operate, but it has paid.

Mr. Bergstrom went into the matter of ventilation which they consider an important element of safety. In other words, they have found poor ventilation or improper temperature increases accident frequency. Proper lighting is another item which he considered important. Scientific illumination has helped to decrease accidents.

In closing, the speaker stressed the necessity of having good foremen in order that the men may be placed in the right job. He brought out that some men like monotonous

work while others are palled by monotony. This should be ascertained and the men placed in the jobs which are best suited to their taste and temperament.

Discussion

A general discussion of various phases of safety education in pulp and paper plants followed the reading of the two papers on the program. Rogers Cox, a representative of the Division of Safety and Hygiene spoke on fundamental methods of teaching safety to employees of plants. He said that one of the first steps was to teach them to take proper care of their feet and hands. The type of safety shoes for employees came up for discussion, with Ernest August, Mead Pulp and Paper Company, declaring that for a time he had trouble getting their men to wear any shoes at all. Now they all wear shoes and quite a percentage of them wear the safety shoes which are sold in the company's store. Others said they had trouble getting their men to wear safety shoes.

H. T. Murray, safety director of the Container Corporation of America, Chicago, said that the beater room furnished the greatest hazard in the plants of that company. He called attention to the trouble in getting men to wear gloves to prevent cuts and scratches from foreign objects in reclaimed paper.

Mr. Bergstrom suggested that gloves made of extra soft leather without backs could be provided for workmen in the beater room, and that suggestion was taken up by many of those present.

Officers Elected

The section elected Earl E. Grant, of the Crystal Tissue Paper Company, Middletown, Ohio, chairman for the coming year. Robert Seigfried of the Franklin Board & Paper Co., Franklin, Ohio, was chosen as vice chairman and Robert Farquahr of Sorg-Oglesby-Smith, Middletown, secretary.

Before adjournment of the session, the chairman spoke of THE PAPER INDUSTRY Contest and expressed the hope that all members of the section would arrange to list their mills. Mr. Augustus fully explained the terms and advantages of the contest.

Secretary Davis Addressed General Meeting

An interesting feature of the second day of the congress was an address before the general session by Secretary of Labor, James J. Davis. He spoke of the restriction of immigration as tending to reduce industrial accidents, since foreign workmen with their meager knowledge of English and unfamiliarity with American machinery and customs often present hazards in the industrial world.

Will T. Blake, director of the Department of Industrial Relations of Ohio, enumerated the various agencies working toward the prevention of accidents in the Ohio State Government. In these agencies are included the State Division of Safety and Hygiene, the Division of Workshops and Factories, Department of Mines and Mining, Division of Steam Engineers, the Ohio Utilities Commission, the Fire Marshal's office and the Department of Health and the Ohio Highway Department.

The Flexible Steel Lacing Co., Chicago, announces the appointment of A. T. H. Taylor, formerly branch manager at Timmons, Ontario, for the George Taylor Hardware, Limited, as its Canadian sales representative, to fill the vacancy caused by the death of E. A. Rudin. Mr. Taylor's home address will be 161 Glendale avenue, Toronto, from which point he will cover the territory.

H. A. Stevenson, 7310 Woodward Ave., Detroit, Mich., has been appointed to represent the Lewis-Shepard line of lift trucks, stackers and skid platforms in Eastern Michigan. Mr. Stevenson and his associates also represent the Baker line of electric industrial trucks in Michigan.

View of Bucksport, Maine, Site of

AT the head of navigation on the Penobscot river, above Verona island and opposite Fort Knox of Aroostook war fame, stands the ancient town of Bucksport, once a prosperous Maine community, which like many other Maine seaport towns has greatly declined in population in the last fifty years. With a big newsprint paper plant about to be established there by the Maine Seaboard Paper Corporation, which will give employment to many hundreds of people and attract other industries, it is expected that much of the old-time prestige of the place will be restored, and Bucksport be-

J. V. N. Dorr Awarded James Douglas Medal

John Van Nostrand Dorr, prominent metallurgical engineer, president of The Dorr Company, engineers, and well-known in the pulp and paper industry through the use of the Dorr white water save-all and the Dorr system of continuous causticizing for soda and sulphate pulp mills, has been awarded the James Douglas Medal of the American Institute of Mining and Metallurgical Engineers in recognition, according to the citation, "of his invention of apparatus and achievement in developing and improving hydrometallurgical practice." This medal, awarded annually for distinguished service in non-ferrous metallurgy, commemorates Dr. James Douglas, twice president of the A.I.M.E. and founder of the Phelps Dodge enterprise, and will be presented formally at the annual convention of the Institute in New York in February.

Mr. Dorr, after an early association with Thomas A. Edison, graduated from Rutgers University and became engaged in metallurgy in the Black Hills of South Dakota and in Colorado, first as a metallurgical chemist, later as managing partner of a gold mine and then as a consultant. It was during this period that he invented the classifier, thickener, and agitator which bear his name, the use of which has since become virtually standard in the treatment of metalliferous ores and in many branches of chemical, industrial and sanitary practice.

The development of the equipment early invented by Mr. Dorr and the investigations necessary to utilize it to the best advantage in the many industries whose practices have subsequently been improved through its use, led to the building up of an international, industrial organization with branches and affiliations in all parts of the world. Mr. Dorr is president of the Dorr Co., Inc., of the United States, and the head of associated companies in London, Paris, and Berlin, and has established representation in South Africa, Australia, and Japan.

In 1916, Mr. Dorr was the recipient of the John Scott medal of the Franklin Institute for his invention of hydrometallurgical apparatus used extensively in the cyanide process. Rutgers University, which Mr. Dorr has long served as a trustee, in 1927 conferred upon him the honorary degree of Doctor of Science "in consideration of his important contributions to the metallurgical and chemical industries."

Mr. Dorr has been actively identified with the professional societies of those engineering groups with whom he enjoyed a lifelong association. He recently (Dec. 12th) returned from Japan where he served as delegate of the A.I.M.E. to the World's Engineering Congress in Tokyo and expects to leave for South Africa the latter part of February to attend the meeting in Capetown of the Empire Mining and Metallurgical Congress. At various times, Mr. Dorr and his associates have delivered technical papers before the Technical Association of the Pulp and Paper Industry and the American Paper and Pulp Mill Superintendents Association.

Synthetic Lumber from Cornstalks

The economical utilization of farm wastes, particularly cornstalks, is a subject that has claimed the attention of industrial scientists for a number of years past.

Paper is being successfully manufactured from cornstalks at the plant of the Cornstalks Products Co., Danville, Ill. Dr. A. M. Buswell, professor of sanitary chemistry at the University of Illinois has developed a process for making methane gas which may be used for cooking from a combination of cornstalks and ordinary sewage. The latest development to be recorded is a process for making synthetic lumber from cornstalks.

After fifteen years of research, Professor O. R. Sweeney of Iowa State College, Ames, Iowa, has perfected this process and patents for the manufacture of the material have been leased

New Ten Million Dollar Newsprint Mill

come one of the chief centers of the paper industry in Maine.

The new mill of the Maine Seaboard Paper Company, announcement of which was published on page 1590 of the December, 1929, issue of THE PAPER INDUSTRY and further information on page 1801 of the January number, will occupy the site of the old Blodgett Tannery which is shown at the upper left of the accompanying panoramic view of Bucksport and surrounding country. Deep tide water will enable the company to ship by boats. Our thanks are due Portland Press-Herald for permission to reproduce this photograph

to a corporation known as the National Cornstalks Processes, Inc. This new company is capitalized at one million dollars and will maintain headquarters in Chicago. The plans provide eventually for a chain of cornstalk mills throughout the corn belt, which are expected to provide a market for the farmer's cornstalks at $3 a ton or more.

The physical properties of the Maizewood Products Corp. at Dubuque have been taken over, and it is reported farmers in eastern Iowa and western Illinois are already being paid on the basis of $10 per ton, baled and delivered in Dubuque. Patents owned by the state of Iowa, on processes of converting cornstalks have been leased for a period of five years.

The nineteen stockholders of the new company include prominent farm leaders and well-known Chicago business men.

Announcement has just been made that insulating wallboard made from cornstalks at the plant of the Maizewood Products Company, Dubuque, is being used by the Columbia broadcasting system in its new studio in Washington, D. C. The cornstalk board is applied on ordinary wood flooring to minimize reverberation. This is said to be the first time a cornstalk product has been used in a broadcasting studio.

Tentative Course of Instruction

The Institute of Paper Chemistry—Appleton, Wisconsin
Spring Session—1930

Inorganic Technical Analysis—Professor Youtz.
Methods of analysis and interpretation of the data obtained by the examination of important raw and intermediate materials used in the pulp and paper industry. This covers the analysis and interpretation of the results obtained of such materials as: coal and fuel oils, water for boiler and industrial purposes, sulphur, sulphur dioxide, sulphite cooking liquor, lime and limestone, green and white liquor, salt cake, soda ash, size and alum, fillers, glue and starch, bleach, etc.
2 hours lecture a week.
2 afternoons laboratory a week.
Textbooks:
1. Volumes III, IV, and V—"The Manufacture of Pulp and Paper."
2. Schwalbe - Sieber — "Chemische Betriebskontrolle."

II. **Chemistry of Cellulose and Allied Products** — Dr. Darling.
The introductory course covers a discussion of the chemistry of the carbohydrates, their structure and reactions. This is followed by the chemistry of cellulose from the standpoint of its known chemical reactions, and a similar study is included of lignil. The laboratory work will consist of a study of the reactions of the sugars and cellulose, and the analysis of woods and pulp by the standard methods.
2 hours lecture a week.
1 afternoon laboratory a week.
Textbooks:
1. Emil Heuser—"Textbook of Cellulose Chemistry."
2. Hawley and Wise—"The Chemistry of Wood."
3. Standard Methods of Testing used by the Forest Products Laboratory at Madison, Wisconsin.

III. **Structure and Physical Properties of Wood and Plants** —Professor Rogers.
The source, structure, and important properties of the raw, fibrous materials used in pulp making are discussed. Wood identification from a practical standpoint and suitability of the various woods for pulp purposes are included.
3 hours a week.

IV. **Microscopy of Paper Fibres**—Dr. Otto Kress.
The staining and identification of the various fibres used in papermaking, and the analysis of fibre content of different kinds of paper are explained and practiced.
2 hours lecture a week.
Textbook:
1. "Paper Testing Methods"—TAPPI.

V. **Paper Dyeing**—Dr. Otto Kress.
The dyestuffs and pigments classified according to the method used in the industry are discussed from the standpoint of suitability, strength, fastness, etc. Dyeing will be made of all the important dyestuffs, shades matched, and dyes tested from a strength and money value.
1 hour lecture a week.
2 afternoons laboratory a week.
Textbook:
1. "The Manufacture of Pulp and Paper"—Volume IV.

VI. **Paper Testing**—Dr. Otto Kress.
The chemical and physical methods used in paper testing are discussed and practiced.
2 hours lecture a week.
Textbooks:
1. Volume V—"The Manufacture of Pulp and Paper."
2. "Paper Testing Methods"—TAPPI.

VII. **Pulping Processes**—Dr. Otto Kress.
The mechanical, sulphite, soda, and sulphate processes, as well as the newer processes, such as the Semi-chemical and Kebra Processes, are discussed. Visits will be made to mills adjacent to Appleton, where these processes can be seen and studied in operation.
4 hours a week.
Textbook:
1. Volume III—"The Manufacture of Pulp and Paper."

VIII. **Technical German**—Professor Cast.
Advanced technical German to train the student so that he can use to advantage the technical German literature.
3 hours a week.

IX. **Abstracts and Bibliographies**—Miss Roseth.
The methods and purposes of abstracting technical articles, the filing of abstracts, the methods of constructing bibliographies, and their use.
1 lecture a week.
Reports and Abstracts.

X. **Outside Lectures.**
Experts on various subjects from the mills, as well as representatives from manufacturers selling supplies and equipment to the industry will give talks on their special

Proposed Schedule of Work

Lecture Periods from 9 to 12 A. M., 6 days a week.
Laboratory Work from 1 to 5 P. M., 5 afternoons a week.

		Lecture Hours	Laboratory Afternoons
I.	Inorganic Technical Analysis	2	2
II.	Chemistry of Cellulose and Allied Products	2	1
III.	Structure and Physical Properties of Wood and Plants	3	
IV.	Microscopy of Paper Fibres	2	0
V.	Paper Dyeing	1	2
VI.	Paper Testing	2	0
VII.	Pulping Processes	4	0
VIII.	Technical German	3	0
IX.	Abstracts and Bibliographies	1	0
		20	5

Westinghouse Salute to Be on the Air Tuesday

J. C. McQuiston, general advertising manager of the Westinghouse Electric and Manufacturing Company, announces that the Westinghouse Salute now an N.B.C. Wednesday evening feature program will be changed to Tuesday starting February 4.

The program, one of the outstanding features of the National Broadcasting Company's coast-to-coast network, will be on the air from 10:00-10:30 p. m. Eastern Standard Time. The change was made to better accommodate the vast army of listeners in the middle and far west.

Canadian Technical Section Has Fine Meeting

Valuable Papers and Discussions on Control of Sulphite Pulp and Groundwood, Including Review of Newsprint Manufacture

THIS year's meeting of the Technical Section of the Canadian Pulp and Paper Association marked the seventeenth in its history and, in the opinion of pulp specialists and others interested in the welfare of the section, yielded results in the way of papers and discussions pertaining to processes of sulphite pulp cooking and groundwood manufacture, of unusual value. The meeting was marked by several notable departures from custom. Last year the sittings of the section took place in the assembly hall of the Pulp and Paper Research Institute, the headquarters of the general association on the grounds of McGill University, and in previous years the section has met with the parent body at hotel headquarters. On the occasion of the seventeenth annual meeting held January 29 and 30, the large hall of the Engineering Institute of Canada, on Mansfield street, opposite the University Club, was the scene of the gathering. Admission to the sittings of the Technical Section was restricted to members of the section and to a few international guests qualified for membership, a committee having been appointed by the chairman to pass on the eligibility of any person who sought entrance. In this way the sessions were closed to all but members, or those eligible for membership.

President Jones Invited to Platform

The meeting was opened at 10:15 o'clock on Wednesday morning, January 29, by the chairman, R. A. McInnis, of the Anglo-Canadian Pulp and Paper Mills, Ltd., Quebec, who recognized Col. C. H. L. Jones, president of the Canadian Pulp and Paper Association, in the audience and invited him to take a seat on the rostrum. The minutes of the previous meeting were read by Secretary Edward Beck, after which Chairman McInnis submitted his annual report, printed copies of which were available.

Chairman's Annual Report

Mr. McInnis gave an account of preliminary work concerned with the selection of committees and the development of a program for the Pulp and Paper Division of the Research Institute. An eighty-page book had been distributed to members giving an enumeration and discussion of the problems to be attacked at the institute in a research program developed for the advisory committees of the Technical Section. The investigations are concerned with methods of analysis, definition of pulp quality, the printing qualities of paper, occurrence of pitch deposits in paper, a systematic study of the groundwood process, development of pulps for use in the manufacture of artificial silk, studies of newsprint relating to the formation of the sheet on the fourdrinier wire, and sulphite pulp studies.

In the preparation of a research program of this kind which, Mr. McInnis said, represented the industry's views of the work which should be undertaken by the Research Institute, it was realized how little definite data was available regarding operating practices in the pulp and paper industry. The work served also to emphasize the need of a technical secretary for the section, one whose services would be available to collect, compile and distribute the data for the use of the industry as well as the institute. The delay in appointing a secretary was caused by the incomplete organization of the joint administrative committee having oversight of the institute and the necessity of providing a groundwork for a secretary's activities. The Technical Section has now the choice of more than one qualified appointee for the post and the association will be asked to provide the required appropriation so that the incoming executive committee may fill the position without loss of time.

Fuller Co-operation Urged—A plea was made by Chairman McInnis for more effective co-operation. "Everyone in this industry knows that we lack definite knowledge of related facts and that is a real handicap to the progress of the industry," he said. "This want can only be filled by co-operation.

"Unfortunately there are some members, their number is not very numerous, who quite obviously are disinclined to co-operate fully in exchanging and developing information. If only a minority of the members failed to appreciate the value of building up this data into a more definite science, then, of course, neither the institute nor the technical secretary will be able to render a full measure of service to the industry.

"On the other hand, if there is wholehearted co-operation, we can get much further ahead, and that very quickly. It depends entirely upon the membership itself. There is nothing that the members of the council can do about that; they can only provide the machinery with which to carry on. The members as a whole must supply the rest."

As to Secret Processes—He emphasized the point that the institute with all its equipment and resources must depend upon facts developed in the mills. It was sometimes objected that a company was using a secret process which it would not care to divulge, but Mr. McInnis said it was the general opinion that there was no such process and no such company.

Referring to the program of the meeting, he said the idea was to have an open discussion on groundwood and sulphite from the control point of view. There was plenty to discuss and plenty of men in the industry capable of discussing the problems presented and the combination of the two should make the sittings of unusual interest.

In closing, he spoke of the donation by Arthur L. Dawe of a gold medal to be awarded annually to the member submitting the most important paper at the annual meeting. The trophy is to be known as the I. H. Weldon Medal.

State of the Treasury

Secretary Beck was asked to report receipts and expenditures for the year ending December 31, 1929. The receipts from different sources amounted to $4,339.92. This included an association advance of $1,400. Disbursements during the year amounted to $3,839.74, leaving a balance in the bank of $500.18. Reporting on the membership, Mr. Beck gave the total at the end of the year as 297. New members admitted during the year numbered 34, divided into 19 senior, 1 associate, 13 junior and 1 honorary member. There was one resignation and the addresses of five members are unknown.

Mr. Beck explained that the books of the treasurer had been audited by a firm of accountants, and, on motion of Mr. Carruthers, seconded by Mr. Costigane, the report was adopted.

At this point Chairman McInnis turned to Col. C. H. L. Jones, president of the Canadian Pulp and Paper Association, and invited him to address the meeting.

President Jones Greets the Section

Colonel Jones expressed the pleasure he felt at being with the Technical Section on the occasion of its seventeenth session. While spasmodically the section had seen better years than the one just closed, its progress had been quite consistent and this year was the best in its history, which he declared to be a matter of congratulation both to the section and its chairman. He said he had glanced over some of the reports and had been greatly impressed. The work of the Technical Association was becoming of increasing importance in the eyes of the executives of the association and it was

right and proper that this should be so. He had always a warm place in his heart for the section and for a number of years had concerned himself with the work of its twin sister, the Research Section. Now that the Research Section was merged with the Technical Section, the association had a vision of greater things through the amalgamated effort of these two important sections.

Sectional Goodfeeling—Colonel Jones alluded to the fine feeling that exists among the members of both the Technical Section and the Woodlands Section and intimated that some of the trade sections of the association would be benefited by an infusion of the same feeling. The common thought and desire for accomplishment, with a common effort, had stimulated the Woodlands Section and the Technical Section to a wonderful unanimity of purpose.

Exchanging of Information—Referring to the joining up of the Research Section with the Technical Section for a program of industrial research, and mentioning the difficulties to which Chairman McInnis had alluded in his address, President Jones said there were companies which were jealous of their processes, perhaps set too great a value on them and kept them secret on that account, never visualizing the possibility of some other firm having something better which could be exchanged through an interchange of ideas and experience.

President Jones said that a freer exchange of information would operate not only for the general good of the trade but for the individual good of the company, and he believed in stressing the value of this, not that he would suggest giving everything up, for there were certain things which concerned a member's own company and concerned it alone. But an interchange of ideas and experience would operate to the advantage of the trade and the art.

In closing, President Jones congratulated the section on the success of the summer meeting. He regretted that he was prevented from attending. "I was engaged in a popularity contest in Nova Scotia, building a newsprint mill," this in allusion to the construction of the new mill of the Mersey Paper Company at Brooklyn, N. S., of which he is president.

Bebore going on with the regular order of business, the chair appointed a committee consisting of George Carruthers, C. B. Thorne and H. J. Buncke to pass on the eligibility of persons seeking admission to the meeting.

Standing Committees

Reports of the following standing committees were called for:

Committee on Abstracts—J. N. Stephenson, Gardenvale, Que.

Committee on Fine Paper—B. D. Millidge, Howard Smith Paper Mills, Ltd., Cornwall, Ont.; K. S. Maclachlan, Alliance Paper Mills, Ltd., Merritton, Ont.; C. N. Gain, Interlake Tissue Mills, Merritton, Ont.

Committee on Heat and Power—G. D. Bearce, New Brunswick International Paper Co., Dalhousie, N. B.; W. G. Cuttle, Ste. Anne Paper Company, Beaupré, Que.; F. O. White, Fraser Companies, Ltd., Edmundston, N. B.; E. B. Wardle, Canada Power and Paper Corporation, Grand' Mere, Que.; A. A. MacDiarmid, Price Bros. & Co., Ltd., Quebec; G. Studley, Anglo-Canadian Pulp and Paper Mills, Ltd., Quebec.

Committee on Mechanical Pulp—D. L. McLeod, Price Bros. & Co., Ltd., Kenogami, Que.; L. E. Kendall, Abitibi Power and Paper Co., Ltd., Iroquois Falls, Ont.; F. H. Andrews, Box 221, Shawinigan Falls, Que.; M. W. Davis, Apt. 904, Chateau St. Louis, Quebec; Gerge A. Balko, Canada Power and Paper Corporation, Grand' Mere, Que.

Committee on Newsprint—J. O. Mason, Canada Power and Paper Corporation, Grand' Mere, Que.; J. E. Patterson, Abitibi Power and Paper Co., Ltd., Toronto, Ont.; E. A. Charlton, International Paper Co., New York; W. G. Mitchell, Price Bros. & Co., Ltd., Quebec; D. W. Ambridge, Anglo-Canadian Pulp and Paper Mills, Ltd., Quebec.

Committee on Pulpwood (Manufacturing Phases)—James MacLaurin, Canadian International Paper Co., Temiskaming, Que.; R. W. Sterns, Abitibi Power and Paper Co., Ltd., Iroquois Falls, Ont.; Ellwood Wilson, Canada Power and Paper Corporation, Grand' Mere, Que.; B. D. Millidge, Howard Smith Paper Mills, Ltd., Cornwall, Ont.

Committee on Publications—Roy Campbell, Canadian International Paper Company, Montreal, Que.; A. Papineau-Couture, 170 Youville Square, Montreal; J. N. Stephenson, Gardenvale, Que.; Edward Beck, Canadian Pulp and Paper Association, Montreal, Que.

Committee on Sulphite Pulp—G. P. Genberg, Fraser Companies, Ltd., Edmundston, N. B.; F. L. Mitchell, Box 164, Iroquois Falls, Ont.; O. F. Bryant, Nashwaak Pulp and Paper Co., Ltd., Saint John, N. B.; C. S. Hawkins, Price Bros. & Co., Ltd., Riverbend, Que.

Committee on Sulphate, Soda and Kraft Pulps—Geo. H. Tomlinson, Howard Smith Paper Mills, Ltd., Cornwall, Ont.; Donald E. Cable, Oxford Paper Company, Brooklyn, N. Y.; Thomas C. R. Crawley, Dryden Paper Co., Dryden, Ont.; Henrik Grinstad, Brompton Pulp and Paper Co., Ltd., East Angus, Que.; Thurston Iversen, St. Maurice Valley Corporation, Cap Madedeine, Que.; K. G. Wilen, Wayagamack Pulp and Paper Co., Ltd., Three Rivers, Que.

Representative on Technical Service Council—A. P. Costigane, Secretary, Ontario Pulp and Paper Makers' Safety Association, Federal Building, Toronto, Ont.

For the committees of abstracts and fine paper, J. N. Stephenson and C. N. Gain, respectively, reported progress.

Electric Generation and By-Products Power

G. Studley reported for the Committee on Heat and Power. He instanced the publication of a paper from the committee on "The Origin and Causes of Electrolytic Gas in Steam from Electric Steam Generators," by a Dr. John Campbell and William E. Rogers which was available in reprint form. He said that the committee was engaged on the preparation of a paper for the summer session of the Technical Section on "The Possibilities of By-Product Power with Data on the Turbine Manufacturers' Developments in this Field," and called attention to an abstract of his paper accompanying the report in which the method of treating the subject was outlined. The committee intends to survey the possibilities of a balanced 500-ton newsprint mill along the lines of the potential development of by-product power, which it is believed will be of real value to the industry.

Variables in Groundwood Manufacture

D. L. McLeod reported for the Committee on Mechanical Pulp. The report advocated the republication of an early paper by John H. Thickens on groundwood manufacture, not necessarily in full detail, but sufficiently to enable all groundwood men to understand the effects of the different variables met with in manufacture.

There is no satisfactory method of defining groundwood as to quality, but valuable results would be obtained by a study of the process with an attempt to show what actually happens at the surface of the stone. Mr. McLeod enumerated the different manufacturing variables, as follows:

Manufacturing Variables—(1)—Stone surface; (2)—Peripheral speed; (3)—Pressure of wood; (4)—Temperature and consistency; (5)—Power input; (6)—Grinding area; (7)—Wood quality.

The variables named may affect production, yield and quality, the report said.

Need for Checking Thicken's Findings—Discussing these variables in detail, the committee said with regard to speed that Thicken's findings were not very conclusive and should be checked with special reference to quality. Theoretically, under conditions of high pressure and low speed, the wood should be pressed deeply into the irregularities in the stone surface and should tend toward rather coarse stock. At high speed and low pressure, with the high points on the stone brushing lightly against the surface of the wood, the tendency should be toward a finer stock and lower production, which was contrary to the results obtained by Thickens.

The Limits of Grindstone Speeds—Peripheral speeds as high as 4,000 f.p.m. were considered quite as far as safety would permit with a material like ordinary sandstone, but this would not apply to an artificial stone. A knowledge of the upper limit of speed in the case of artificial stones was desirable, according to the committee.

Temperatures of Stone and Stock—As to temperature, the committee said a distinction should be made between stock temperature and stone temperature or the temperature im-

mediately at the grinding surface. With a dull stone, little stock can get in between the stone and the wood, so that grinding temperature will be increased regardless of the stock temperature in the pit, and if this condition is carried far enough the pulp will be burned. Information of great value would be developed by a study of stock temperature and grinding temperature, if some method of measuring grinding temperature could be found.

Effect of Grinding Pressure—In reviewing the effect of grinding pressure, the report noted that an increase in grinding pressure meant an increase in power consumption, and with the same stone surface, an increase in production in greater proportion than the power, so that power consumption per ton was lowered and the stock coarser. The reason for this was stated. The wood being pressed deeper into the irregularities of the stone surface, more fiber bundles were torn off and fewer individual fibers. To get quality of pulp approaching that made under lower pressure conditions, it was necessary to run with a much duller stone. It was noted that the industry is not clear as to the comparison, from the point of view of quality, between pulp made with low power input, a sharp stone and low pressure, and pulp made with the opposite factors, the hp. per ton being the same.

Need for Fundamental Study—In summarizing the proposed studies, which included power input, grinding area, and wood quality, the committee stressed the desirability of a close study of the fundamentals of the groundwood process in all its ramifications so as to lay before the industry in terms understandable by the man in the mill a picture of what actually happens when wood is held against a revolving stone to produce mechanical pulp. Reference was made again to the early study by Thickens, which the reporter of THE PAPER INDUSTRY takes to be the article entitled "Grinding Conditions Affecting Mechanical Pulp," by McGarvey Cline and John H. Thickens, which was published in the weekly magazine called Paper, September 25, 1912, p. 20.

The report of the committee closed with a recommendation that short courses be given at the Pulp and Paper Research Institute to men engaged in the manufacture of groundwood, as the personal contact involved would be of greater benefit to the industry than the issuing of results in report form alone, while the association of manufacturing men with the institute staff should be of benefit to both. The report was signed by the full committee whose names are given in the list printed above.

The reports of the committees on the four chemical pulps were called for without response. E. B. Wardle presented a brief report for the Committee on Engineering Standards, following which Secretary Beck was asked to read the report of the Joint Administrative Committee of the Pulp and Paper Research Institute, F. A. Sabbaton, chairman, being absent.

Report of Joint Administrative Committee

The report stated that, following the last annual meeting of the Canadian Pulp and Paper Association, the joint committee in charge of the administration of the Pulp and Paper Research Institute had been reorganized, so that the committee now comprised representatives of the Dominion Government, representatives of the university and representatives of the industry, as originally planned. Monthly meetings have been held throughout the year at which reports have been received from Professor Hibbert, in charge of the university's activities in the institute, and from E. P. Cameron, in charge of the government's work. The desirability of engaging a research specialist was brought up and request made that the authority given at the last annual meeting to incur an expenditure of $10,000 for the purpose of engaging a research specialist be renewed for another year, this amount to be additional to the $20,000 annual appropriation now provided. The committee feels that additional support for the work projected is required and it accordingly asked authority to incur obligations to the extent of $20,000 a year, "if and as such expenditure in their opinion becomes necessary and expedient."

Statement by Professor Hibbert

Included in the report of the Joint Administrative Committee was a lengthy statement by Professor Hibbert relating to the work carried out in the last three years in the Department of Industrial and Cellulose Chemistry. This took the form of a report to the Joint Administrative Committee descriptive of certain lines of research pertaining to "Fundamental Principles Underlying the Manufacture of Sulphite Pulp," as (1) The physical and chemical properties of the materials used in the manufacturing process; (2) Nature of the changes taking place during the manufacture of sulphite pulp; (3) Work on cellulose and related compounds.

In summarizing the work already done in research under the headings named, the following results were reported:

1. Results of considerable value in enabling a better control of conditions existing in the manufacture of sulphite pulp have been definitely established by determinations of the pressure-temperature diagram for sulphur dioxide. It has been found possible to develop a general theory of the nature of the reactions taking place during the process and to show that certain features call for special attention:
   (a) The recognized temperature limit of around 120° is one apparently in which important chemical changes take place, the true explanation of which should shortly be available.
   (b) It has been shown that products closely related to lignin sulphonic acids are very strong acids.
   (c) These strong acids, as well as the cooking liquor itself, are able to bring about marked decomposition degradation of the pulp.
2. The quantitative estimation of pentosans in pulp has been carefully studied and reported upon.
3. A short study has been made of a comparison between alpha cellulose determinations developed by Dr. Ross and the method suggested by the Standardization Committee of the A.C.S.
4. A larger number of investigations have been carried out on synthetic products having a bearing on the structure of cellulose.
5. The nature and structure of soda cellulose have been established.
6. Important investigations have been carried out in the Departments of Physical Chemistry and Botany respectively on Penetration of Liquids into Fibers, especially wood. These are found to have an important bearing on the question of sinkage losses, pulping processes, etc.

The report closed with an outline of the program of studies and investigation planned for the present year, together with a request for an increased grant of $15,000, making a total of $22,500 for 1930.

Measuring Wood by Weight

George A. Balko, groundwood superintendent, Canada Power and Paper Corporation, Laurentide Division, was called upon to present a report on the automatic weighing of wood and he presented a number of facts and figures concerning the operation of the Blake Denison log weigher now in use at the mills of the Canada Power & Paper Corporation. He gave an interesting account of the various systems that have been used for weighing chipped wood and called attention to the paper read by F. L. Mitchell, of the Abitibi Power & Paper Company at the meeting of the Superintendents' Association at Marinette, Wis., last September on "A Weightometer for Weighing Chips."

Accuracy of Chip Weightometer—Frequent tests of the chip weightometer revealed an average error of less than 0.5 per cent. It was difficult, even with photographs of the chief operating parts for one who had never used the scale to understand its operations, and to repeat what Mr. Balko said would be no aid in visualizing how the weightometer operates.

Weighing Groundwood Logs—For weighing 4-foot blocks for the groundwood process, a scale on a chain conveyor from storage file to the charging floor of the magazine grinders is used. This differs from the chip weightometer in that it operates on the principle of intermittently totalizing the load passing over it. A year's trial of chip and log weighing has demonstrated the desirability of wood weighing, according to Mr. Balko. He said that it eliminated guess work and enabled observations to be made of deviations in the possible

yield per cord of wood from different sources of supply. "The quantities of wood used in each process (sulphite and groundwood) are known in both weight and volume with reasonable accuracy and the ratios of raw material to the manufactured product are definitely determined.

Wood Difficult to Measure—Discussion was invited and Mr. Weldon led off by saying that wood was the most difficult of all materials to measure properly, because it never contains the same amount of water twice and a cord is not always a cord.

How About its Moisture Content?—C. B. Thorne deemed it vastly interesting to learn that wood can be weighed but he asked how about estimating its moisture content. A. E. Parrett suggested taking a quarter of a cord of wood from the conveyor, chipping it and determining the moisture in that way.

Checking Discrepancies—Mr. Thorne wanted to know what kind of an investigation Mr. Balko made when he found that he was using too much wood for the amount of pulp he was getting. A discrepancy of this kind might result from the moisture content, or waste of pulp in the sewer, but what was done when it is found that the mill is using too much wood?

Precautions Taken—Mr. Balko said precautions were taken in all corners of the mill where waste was liable to occur. All drainage was drained to the floor and not into a sewer. Practically all sources of leaks were blocked, all digester cooks timed and recorded so that no part of a cook could be dumped into the river.

Heavy Wood Gives Most Pulp—In further reply to Mr. Thorne and others, Mr. Balko said that if it was discovered that too much wood was being used from the grinding room point of view, an investigation would reveal that the wood which had been passing in was light in weight. When the wood is heavy it takes fewer cords to keep up production on the grinders.

Accuracy of the System—J. O. Mason said it seemed to him to be a question of whether the conversion of wood by weight into wood by volume was or was not accurate. Mr. Mason is manager of manufacturing at Laurentide and his comments were heard with interest. He said that when the woodpile was checked up by an engineering survey in the spring, it was found that there was an excess of 1,500 cords, using this factor, while in the fall there was a shortage of 2,000 cords in a total of 95,000 cords, so it would appear to be possible by the use of the ordinary conversion factors to convert the wood back into volume measure pretty accurately.

Weighing Wood a Forward Step—W. G. MacNaughton, of the International Paper Company, expressed his conviction that the section was to be congratulated both upon the paper and its discussion. He could see that the application of this device for weighing wood and the method for weighing wood blocks was a step in the direction of obtaining really accurate figures in pulp production. It was well-known, he said, that when the bulk of the wood comes down the river, perhaps several hundred miles, and is barked that a problem arose as to the inventory of the wood in the log pile. He believed in weighing the wood and could see no reason why the weighing device should not be used on the wood as it goes to the log pile. He knew of one mill in which the barking-drum waste was also weighed. Perhaps the logical thing would be to weigh the wood in tons as it comes out of the river and forget all about "cords." A cord in Ontario, so called, is 115 cubic feet of wood, exclusive of the bark, and if the word "cord" is used it may be something entirely different from the cord of 128, or 156, or 148 or some other figure of stacked wood on the pile. With the use of a weighing device on the wood as it is received, checking the quantity going to the log pile, and again from the log pile to the grinder room or to the chipper, there was nothing more to be desired.

Adjournment for Luncheon

This concluded the morning sitting and upon adjournment, the members went to the Pulp and Paper Research Institute where a most appetizing buffet luncheon was served. After luncheon they were conducted over the paper mill downstairs where the machinery was put in operation and a scene of great activity was presented to the accompaniment of the hammering noise of a Marcy rod mill erected on a raised surface some short distance from the paper machine which was busy turning out sizeable reels of paper.

AFTERNOON SITTING

At the afternoon sitting on Wednesday, Colonel Smythe reported for the Technical Service Council after expressing regret at his inability to be present at the morning sitting. One of the primary functions of the Technical Service Council is to retain in Canada the graduates of Canadian schools. Started in July, 1928, it has been in active operation for eighteen months. During that time it has had 1,600 requests for men, at salaries ranging from $1,500 to $8,000. The paper industry has drawn on the council for some seventy chemists, engineers and mechanics, the requests being for men under 36 years of age, the ages of 40 to 50 being a barrier to employment. Colonel Smythe said that the product of Canadian scientific colleges represented the most valuable raw material available.

Paper Read by Title

Chairman McInnis announced that several papers which had been received too late for consideration in the program would be taken as read and published in the proceedings. These included "Hydration of Cellulose by Beating," by W. Boyd Campbell and Lloyd M. Pidgeon; "The Origin and Causes of Electrolytic Gas in Steam from Electric Steam Generators," by Dr. John Campbell and William E. Rogers, and "What Work a Jordan Will Do," by Harry S. Spencer.

The Manufacture of Groundwood

The scheduled business of the afternoon sitting was then taken up, the main topic being "Control of Grinder Operation in the manufacture of Groundwood," under the chairmanship of D. L. McLeod, chairman of the Committee on Mechanical Pulp.

Simple but Complicated by Variables—Mr. McLeod led off with a statement concerning the simplicity of the groundwood process, which, however, had enough operating variables to make it rather complicated, seeing that our knowledge and information on some of these variables was rather indefinite and vague, because of the difficulty of performing accurate experimental work in the mill.

Effect of Variables—The speaker said that in the Price Bros. mills, an allowance was made for the uncertanties attendant upon variables, and in working out a system for grinder control the simplest and most obvious methods were adopted. What was definitely known is that the finer the wood is ground the finer the pulp is. Of the variables, not many are under the operator's control and he is somewhat limited in what he can do with these. Pressure is outside his control and all that is left for the grinder man in the way of control of the operation, are temperature or consistence and stone surface. Mr. McLeod said that he did not regard temperature as particularly important except as it affected consistence of the pulp. If the stock was too thin, the stone surface could not be kept clean, and there was danger of the stone breaking when the stock was too thick. He said he had never been able to detect a great deal of difference in operation over fairly wide ranges of temperature, which was also the experience of J. H. Thickens. Apparently the only variable subject to the control of the operator was the stone surface. A sharpened stone increases production and freeness and makes a rather coarse pulp. Production falls off with a dull stone; the pulp becomes slower and finer, making it necessary to resharpen the stone.

Factors of Quality—As a rule the average rate of production and freeness will show on a graph as a straight line through a saw-toothed curve of which the average height will depend on the rate of production of the paper machine, so that in this case production and quality are not under the control of the operator, his work being determined by the power available and the production demanded by the paper machine. This, according to Mr. McLeod, was only another way of stating that horsepower per ton or per cord was the governing factor in groundwood quality. With fixed power, quality and production are definitely and inversely related. A large quantity of coarse free stock or a smaller quantity of

fine slow stock can be made, but for a given degree of fineness there is a certain definite quantity of pulp that must be produced. If more pulp is needed, quality must be sacrificed.

Pressure and Production—Mr. McLeod observed that if a motor drive is used, with unlimited power, production could be increased by increasing the pressure, which increases the power input and, at the same time, the production in greater proportion than the power. To maintain even quality of pulp it is necessary to operate with a duller stone. This was his own method or rather the principle he employed in controlling grinder operation. In his mill two grinder rooms were operated, one having pocket grinders with hydraulic drive and the other equipped with continuous grinders motor driven. The power input in speed is fairly constant with the pocket grinders and continuity of operation is maintained by stone sharpening, not much attention being paid to temperature. Production was measured by the freeness test which is a fairly reliable gauge of measurement where conditions of power input and flow sheet are constant.

In regard to burrs, Mr. McLeod said he had no definite ideas as to the relative merit of different burrs, except that the finer burrs were easier to control.

Control of Grinder Operation

L. E. Kendall, of the Abitibi Power and Paper Co., Ltd., was called upon discuss control of grinder operation. He started off by quoting what John H. Thickens said in 1912 on the grinding of spruce for mechanical pulp to the effect that groundwood is not made according to any fixed standards of practise. In the eighteen years that have elapsed, a lot of uncertainty and variation was characteristic of the manufacture of groundwood pulp, Mr. Kendall said. He enumerated some of the variations and showed how they might be offset by controlling such factors in the manufacturing process as pressure per sq. in. of pocket area; peripheral speed; temperature of grinding; consistence of stock in the stone pit, and burring or stone surface. He discussed variations in wood and stones and their relation to controllable factors.

Characteristics of Woods—Comparing spruce and balsam, he said that balsam was generally softer and less dense than spruce. If a scale could be developed to measure wood quality as to its grinding properties, small slow-grown hard spruce would be at one end and big quick-growth balsam at the other. But he questioned if rate of growth were a good measuring stick. A Brinnel machine to test hardness might be better, or the determination of some other quality yet to be designated.

Condition of Wood as Received—The condition in which wood was received at the mill was important to consider, and Mr. Kendall enumerated certain possibilities which affected the character of the pulp, according to whether (a) the wood was summer cut with immediate delivery by rail without watering or seasoning; (b) winter cut and immediate delivery to the mill in a frozen state; (c) winter or fall cut and delivery by water, either next spring or fall or possibly the second or third season afterwards; (d) wood delivered as in (b), but piled unbarked for use the next summer or following winter; (e) wood delivered as in (c), then piled rough or peeled for use the following winter, or even a summer or two after that.

Each mill had its own technique or system to take care of changes in wood quality, involving alterations either in stone face, grinding pressure, peripheral speed, temperature, or pit consistence. The basic effect of each would determine the necessary action to be taken.

Factors Influencing Stone Face—The factors influencing stone face were discussed in detail, size of grit, bond and burring being considered. Grit size is designated by the mesh of the screen on which it is retained in passing through a standard set of screens, from 14 mesh to 150 or 200 mesh.

An Exclusive and Valuable Paper—Mr. Kendall's paper was a most exhaustive one and represented a valuable contribution to the literature of the subject. Summarized, his leading conclusions were (1) pressure of grinding influences production and quality; (2) peripheral speed influences tonnage of production, but has small influence on quality, though high speeds may yield a short-fibered pulp; (3) stone face, temperature of stock and consistence of stone pit are closely related; (4) burrs vary as to cut and lead, the cut influencing body diameter of the fiber and the lead the fiber length, so that control of pulp quality is possible by using different combinations of cut and lead; (5) grinding wood for mechanical pulp is an art, but certain factors can be put under control by experimental work, and it will be possible for a groundwood mill yet to produce the uniform quality of pulp required for the economical manufacturing of newsprint.

Best Conditions for Grinding Wood

B. C. Brown, of the International Paper Company was the third member called upon to give his views of efficient principles of groundwood manufacture. He read a prepared statement of considerable length in which he covered such subtopics as Temperature and Consistence, Speed, Pressure, Surface and Burrs, Power Imput, Grinding Area, Wood Quality and Grit and Character of Stone.

It was interesting to learn from Mr. Brown's contribution that technical control of groundwood manufacture was now coming into more general use with the artificial stones in which uniformity of surface, grit, and other desired characteristics could be duplicated exactly. The pressing need was for a scientific method of judging the quality of mechanical pulp with the least loss of time.

Control of Temperature—In regard to temperature, Mr. Brown said this was controlled by the amount of shower water applied to the stone and was under the control of the grinder operator. Heat is generated in the grinding of the wood and the degree of temperature depends on rate of grinding and stone surface, the rate of grinding being dependent in turn on the power input as well as stone surface and wood condition. The consistence of the pulp is also controlled by the shower water and dependent on stone face and the rate of grinding.

It was noted by Mr. Brown that higher temperatures and consistencies tend to draw out longer fiber, though an excess would mean waste and coarse fiber.

Speed of Stones—On the question of speed, he said that with modern magazine grinders which are usually motor driven, speed could hardly be considered a variable as compared with the old waterwheel grinder. The peripheral speed of stones varies with their diameters. Thus, between a 62-in. stone running at 240 r.p.m. and a 46-in. stone running at the same speed, there would be approximately 1,000 ft. per minute difference in peripheral speed. It has not yet been determined what is the best surface speed for efficient grinding.

Influence of Pressure—As to pressure, this was controlled to a great extent by the power input on grinders with load regulators. Pressure influenced the quality of pulp; with a soft, dry wood and a coarse-gritted stone, a lower grinding pressure would yield a better pulp. What the best grinding pressures are was an undecided point.

Of great importance is the surface of the stone and its burr. The burr is used to maintain uniform surface conditions. It was customary to use a spiral cut burr for sharpening or grit opening and a diamond cut burr for smoothing or dulling.

Favors Large Grinding Area—Power input is controlled by a load regulator, and it can be adjusted to give any desired grinding pressure. Grinding area indicates the amount of stone surface exposed to wood and the pressure. He favored large grinding areas and low pressures because they were influential in keeping the pulp quality uniform.

In dealing with inferior wood a dull stone surface and lower pressure could be used.

A variable which causes trouble is the grit in grinding stones. The finer gritted stone usually gives a finer pulp, a coarser gritted stone a coarser pulp and these different grits and characters can be altered to some extent by the use of different cuts of burrs, but it is the grit of the stone that should determine its selection, since this is what does the grinding.

Mr. Brown was followed by George Balko who described the equipment of a battery of twenty magazine grinders operated electrically. He gave some hints on manufacturing

methods and expressed the opinion that jackpine makes the poorest groundwood pulp.

General Discussion of Grinding Operations

He was followed by A. E. Parrett who gave what he called a general talk on control of grinder operation in the manufacture of groundwood, reading from a preprint of his remarks. He discussed quality of wood, temperature and consistence of stock, make of stone (natural or artificial), stone surface and burrs used and the four factors of freeness, strength, production, and power. Like the old papermaker's expression, "Paper is made in the beater," he enunciated the dictum that "newsprint is made at the grinders."

Classification of Stones—Of special interest to many in the hall was Mr. Parrett's classification of stones in order of merit with reference to production, quality and cost of pulp shown in tabular form. Mr. Parrett spoke of seasonal changes of burrs. In the summer months, No. 9 spirals, 1¼ in. or 1½ in. lead are used, and No. 8 spirals, 1¼ in. or 1½ in. during the winter months. Stones are dressed as often as necessary, depending on the grade of stone and the quality of stock being produced.

Appreciation of the Discussion

Chairman McInnis said it was evident that a great deal of thought and time had been spent on the subject by those who took part in the discussion.

H. J. Buncke asked if any inconsistencies had been found in the work of practical operators and publications on the subject since the appearance of Thicken's and McNaughton's earlier report.

Mr. McLeod said that generally speaking he had found it difficult owing to operating conditions to run a control, but he did occasionally get surprising results.

Mr. Balko called attention to a statement by Thickens in his June, 1916, report that production decreases with temperature, results which were not compatible with present day practice, but Mr. Kendall said that the theories developed by Thickens were pretty near right and still held good.

Influence of Temperature

A query by Mr. Wardle in regard to the proper temperature in grinding, as to whether 150 deg. to 190 deg. Fahr. was the right thing brought replies from both Mr. Kendall and Mr. McLeod that 160 to 180 deg. was normal. L. T. Crossley asked if the investigation had developed any relation between temperature and the formation of the pitch on the fourdrinier wire.

Fine Pulp Desired

Mr. Mason recalled a statement by Mr. McLeod that the finer the pulp was the better it was, and its production consumed more power. He supposed that this applied only within certain limits and asked if Mr. McLeod intended to say that if a pulp was being made with an expenditure of 65 hp. per ton and this power was increased to 80 or 90 hp. to yield a finer pulp would that pulp be better for papermaking purposes.

Mr. McLeod answered in the affirmative, but conditionally. He had found that the higher the hp. per ton, the better the resulting pulp acts on the machines and the better the finish on the paper.

Important Points Stressed

Chairman McInnis called attention to the differences of opinion which had been expressed during the afternoon and he instanced the question of temperature and its importance as well as stone surfaces and burrs. As to speed, he said that more than one person indicated that speed could not be stressed very much, whereas in other cases where direct power is used speed is of great importance. Mr. McInnis said he had been impressed with one statement that pocket grinders afforded the best means of getting the greatest amount of pulp for the least power, but Mr. McLeod made a reference to the continuous grinder and the need of more stone surface. He thought it was important to bring these points out.

Relative Merits of Grinders

Mr. McLeod thought that an important point brought out by Mr. Wardle had been overlooked. This concerned the differences in different types of grinders, and said that after all the only difference between them was a difference in holding the wood against the stone, and if temperature grinding pressure, etc., were the same, any square ft. of grinder area should produce as much pulp of as good a quality. The advocates of continuous grinders aver that better pulp and more of it at a lower horsepower can be made on magazine grinders, while a lot of people with experience insist that pocket grinders will produce the same quality of pulp at a lower horsepower per ton. There were then three points of view: his own, that it did not make any difference; the view of others, that the continuous or magazine grinder will produce the same pulp at lower horsepower and advocates of the pocket grinder who contend that it will produce the same pulp at lower horsepower. It was evident that more information was needed on the subject.

All Grinders Alike

W. G. McNaughton agreed with Mr. McLeod and expressed the opinion that there was very little in the contentions for the different types of grinders. He believed it was true that pocket grinders produced less pulp per 24 hours per stone, because of a lower pressure and less power behind the stone, but in the report presented there was a case where a 24 in. stone, motor driven, made as much pulp per 24 hours as the majority of 48 in. stones were making with all kinds of power behind them. This would indicate that if the power was available behind a 24 in. stone, more pulp could be made on it in 24 hours than is usually the case.

Detailed Work Needed

Mr. McNaughton said it was evident that detailed work was needed to establish the proper relationship between the stone surfaces and the grinding pressure in order to get the fullest production. With a low horsepower per ton of pulp, the pulp cannot be expected to be good, as it will be torn off and coarse because the surface of the stone is coarse.

Mr. McNaughton took the side of the pocket grinder men, saying that if a mill was going to revamp its grinder room or build a new one, more could be accomplished with pocket grinders than is now being done in general practice.

The consensus seemed to be that the cut of burr was unimportant as compared with pressure on the stone. This was expressed by Mr. McLeod and Mr. Brown agreed with him.

Use of Burrs

Mr. Kendall was practically alone in advocating the use of particular burrs and insisted that with an 8-spiral a coarser pulp would be produced as compared with pulp made with a stone cut with a 16-spiral. He said he was still of opinion that the lead and cut of burr influenced the quality of pulp.

Another Feature

I. H. Copeland thought there was another feature which was more important than the type of burr used. He referred to quality and quantity production with the least possible horsepower. While good quality of pulp could be obtained with practically no burr, he asked what influence that would have on the horsepower per ton.

Should the Grinder Room Establish Quality?

Chairman McInnis said that the discussion so far had yielded a good summary of the situation, but he would like to ask a question of three men in the room, Mr. Weldon, Mr. Silver and Mr. Mason, If the grinding room should be on a predetermined basis of quality operation, or operated to suit the paper machines from day to day? He explained that he was looking at the subject from the viewpoint of good paper machine operation.

What Is Good Groundwood?

T. E. Silver, mill manager of the Abitibi Power & Paper Company, said he considered it quite possible to determine the groundwood quality necessary for operation. In fact it was the only proper basis for operating, having in mind the different qualities of wood, changes in temperature, etc. He said he wanted to ask a question. In listening to the several papers and discussions on stone burrs, grinder pressure, consistency, etc., he had not heard anybody say just what

groundwood quality meant. What is good pulp as to quality? Is it a definite thing, or shall we just simply say it is good pulp and it is good because it runs good over the machines. What is the character of the fiber that can be classified as good stock?

Chairman McInnis said that the easiest way to answer the question was to say we don't know. The second answer was that as Mr. Silver came from a big mill and couldn't tell, how could any of the others. It was what all were shooting at.

Mr. Copeland said he agreed with Mr. Silver that the best plan was to determine the quality of pulp which runs satisfactorily on the machines and establish that as a standard.

Scope of Groundwood Study

E. Parke Cameron, director of the Division of Pulp and Paper of the Forest Products Laboratories of Canada, reported for the division, outlining a systematic study of the groundwood process now under consideration as a research problem at the laboratories. The present methods of determining the quality of groundwood pulp embrace (1) Freeness — standard method; (2) Strength — unbeaten; (3) Strength—wet; (4) Fiber quality—lantern projection; (5) Fiber quality—selected screening (Madison); (6) Strength—Madison beam method.

Mr. Cameron said that in addition to the methods mentioned, much might be accomplished by a study of the so-called flour or very fine fiber particles; selective settling was also suggested in this connection.

Main Factors of Operation—It is the purpose of the laboratories to investigate certain main factors of operation in the production of groundwood pulp, such as wood quality, stone surface, speed, pressure, and temperature. It was noted that the development of artificial stones, with their superior mechanical strength and the opportunity for grit and matrix variations, gave a wide opportunity for the study of speed and pressure ranges. Improved technique in the quality, manufacturing and seasoning of natural stone also pointed to wider limits of operation.

To Define Groundwood Quality—The general course of the investigation will include an effort to define groundwood quality, stone quality and stone surface, as well as factors of operation, machine design, auxiliary appliances and related methods of procedure.

Mr. Kendall said the problem of determining groundwood quality required two things: (a) a scheme laid out ahead to cover all variations of wood that the plant is required to handle; and (b) close communication between the grinder room and the woods department, as well as between grinder room and wood room.

After the appointment of a committee on resolutions, and an announcement of Thursday's program by Secretary Beck, the sitting was adjourned.

SECOND DAY'S SITTING

Control of Sulphite Pulp Manufacture

The meeting on Thursday was given over almost entirely to a discussion of the manufacture of sulphite pulp, the chair being taken by Orville F. Bryant, of the Nashwaak Pulp and Paper Company, Ltd., Saint John, N. B., who is chairman of the Sulphite Pulp Committee of the Technical Section.

An Advocate of Slow Cooks

R. N. Miller, of the Oxford Paper Company, led off with a discussion of the advantages of slow cooking, and was followed by L. C. Kelley, of the Fraser Companies, Ltd., Edmundston, N. B., who favored a short cook.

Mr. Miller defined a slow cook as one that took twelve hours or more, a cook of less than twelve hours being considered a fast cook. He stressed the importance of a study of the penetration of chips and pointed out that the cooking of a large digester of pulp on a commercial scale was a much different operation from a laboratory reaction where homogeneity was obtained. In a large digester operation the slow process of cooking tends to equalize things and secure adequate penetration of the wood by the digesting liquor. The temperature must be well controlled and the lower the temperature the better. He observed that in a slow cook, part of the digester content may be cooked ahead of other parts. The rate of steaming was of great importance in the production of a uniform pulp; that is, the number of pounds of steam admitted per hour to bring the cook off at the desired time. No information was available in the literature, said he, concerning the effect of rate of steaming but it was known in practice that a slower rate of steaming made for a better pulp.

Increased Production with a Quick Cook

Mr. Kelley took a diametrically opposite view to the one expressed by Mr. Miller in regard to cooking time and started off by saying that he did not believe a long cook in itself was the only vital thing in sulphite manufacture. He said that at the plant of the Fraser Companies he had had an exceptional opportunity to study the effect of short and long cooks, for thirteen years ago when the mill was started, the cooking period extended over twenty-four hours, the time being shortened within a year or so to eighteen hours as the production increased. With more production in succeeding years, the cooking time dropped successively from fifteen hours, thirteen hours to twelve and eleven hours, and at the present time the mill is cooking nine hours. As the Decker process was used, one hour and twenty-five minutes must be subtracted as representing the time taken up with injections, leaving the actual cooking time was seven hours and thirty-five minutes.

Points to be Considered—In studying the efficiency of long and short cooks, Mr. Kelley said it was necessary to consider (1) cords or weight of wood used per ton of pulp; (2) pounds of sulphur per ton; (3) pounds of steam per ton; (4) yield per digester, and yield per cubic foot of digester space per unit of time; (5) per cent screenings; (6) strength unbleached; (7) bleachability; (8) strength after bleaching; (9) color.

Wood and Sulphur Consumption—He said that the newsprint mills used 1.74 to 1.8 cords of wood per ton of sulphite and he was not aware that the long cook mills were doing any better. It was the same with sulphur consumption, which works up to about a pound of sulphur to a cord of wood which is the same as it was ten years ago. Newsprint sulphite made with a short cook consumes from 240 to 250 pounds of sulphur per ton of pulp.

Steam Consumption—As to steam, the consumption ranged from 8,000 lbs. per ton of sulphite down to 3,600 lbs., according to published statements, but Mr. Kelley said he had not been able to arrive at a figure on this. In his own words, the only conclusion he could reach was, that after two years of experimentation, "There is a h--l of a lot we don't know about sulphite." The consumption of steam on two consecutive cooks, with same cooking time and same wood and same moisture content, cooked identically, the pounds of steam per digester may vary as much as the time between a 9-hour cook and 24-hour cook. He confessed he could give no explanation of this, but with a 9-hour cook and the Decker process, 4,800 to 5,000 lbs. of steam per ton was used, and it had been asserted that less steam could be used with the use of a Ruths accumulator.

Just "The Bunk"—Mr. Kelley kept the audience in a ripple of laughter by his racy remarks, as when he instanced the case of a chemist whose company had to increase production and were worrying about putting in another digester. This chemist said the expense of another digester could be saved by using five minutes more cooking time. Mr. Kelley's comment of this was, "I think that is just 'The Bunk.'" His own experience was that production had been increased with a reduction of cooking time, and that the argument about a decreased yield with a shorted cooking time was nothing but a myth. He admitted, however, that in discussing the subject the day before with a member who had had considerable long experience with long and short cooking times, this member told him he got much more yield per day; Mr. Kelley said that this was not the case in his own experience.

More Screenings with a Quick Cook—The proportion of screenings in a fine sulphite mill is likely to be greater than in a newsprint mill or coarser sulphite plant because newsprint can be screened coarser. His mill was running about 6 per cent. The stock is screened before bleaching and re-

jections from the tailing screens go into the screenings which makes the total bulk larger. He was aware that some mills were running about 3½ per cent screenings.

Referring to the strength of unbleached pulp, he said that the per cent strength value was estimated by adding the Mullen and tear figures, the Mullen being given a value of 100 and the tear the value of 250. By a series of tests and checks by cooks, the strength of unbleached pulp after a 7-hour cook was found to be practically identical with a 24-hour cook, the per cent strength averaging about 63 or 64.

Cooking with Brains—If Mr. Kelley were asked what he cooked with, he would likely reply as did Opie the painter on one occasion when asked how he mixed his colors, "With brains." He said that the cooking of sulphite pulp did not depend so much on the length of the cook as on the brains used in its operation. It was quite as possible to ruin pulp with a long cook as it was to ruin pulp with a short cook, but in normal operations the strength of the unbleached would be the same, whether 9 hours or 24 hours, as had been proved by him only recently.

Bleachability—The Roe chlorine test is used to determine bleachability. Again, he said that bleachability did not depend on length of cook, it depended on the management of the digester content and one could produce an easy bleached stock on a 7-hour cook as on a 24-hour cook, if the operation was conducted properly.

Strength of a pulp after bleaching depends on how it is bleached, and not on how it is cooked. "Under 65, the papermaker has trouble; from 65 to 70 he can carry on; from 70 to 75 he is more or less satisfied; and from 75 up he is a happy man—the happiest in the world!" This in reference to strength test figures.

Mr. Kelley was subjected to several interrogations by members, some of which had been already answered in his talk. Thus, Mr. Campbell asked if a better quality of pulp was produced by a short-hour cook than a long-hour cook, and was answered in the affirmative. Mr. Kelley said it was harder to hold the cook uniform, but it could be done, requiring, however, close attention.

Sampling—Asked as to how samples were taken Mr. Kelley said they were taken from the deckers 20 minutes after the pulp left the blowpit. Mr. Campbell, who said he considered a long cook one of 16-hour duration and a short cook 7 hours, was positive in declaring that he got better results from a long cook, which brought the retort from Mr. Kelley that it could not be proved on paper.

H. O. Keay asked what maximum temperatures were used in the experiments described previously by Mr. Miller, who replied that on a cook of 12 or 14 hours the maximum temperatures would be 105 deg., and on a 7-hour cook 155 deg. As the cook lengthens out the temperature is reduced.

Professor Hibbert observed that Mr. Kelley had obtained his results by the careful addition of steam in a closed system so as to prevent the degradation of cellulose by the formation of ligninsulphonic acid, the properties of which were now being investigated.

Mr. Miller admitted that if he were running a newsprint mill he would use a short-cook sulphite.

Dr. Johnsen Agrees and Disagrees

Bjarne Johnsen, of the Hammermill Paper Company, said he agreed and disagreed with the two previous speakers. While it was possible to get the same yield with short and long cooks it was not the same as to quality, though a more satisfactory sulphite for newsprint might be made with a short cook. He thought a short cook would give a higher unbeaten strength than a long cook, but it was difficult to discuss the subject without figures. He knew from his own experience that there were many advantages in the long cook and it would not be right to say that short cooking is as good as the longer cooking.

Liquor Recovery

The remainder of the morning sitting was taken up with a discussion of Hot Liquor Recovery versus Liquor Recovery in Acid Tanks, and of High versus Low SO_2.

Dr. John S. Bates took the ground that it was at no time necessary to remove good cooking liquor to storage. He said he was more familiar with the Decker system of cooking which entailed a greater digester capacity than the other system. He advised a study of local conditions and the adoption of what was best.

Mr. McInnis questioned the value of heat recovery, saying he had the idea that economies effected in heat recovery were offset by a deleterious action on the pulp.

Doctor Johnsen questioned what was meant by "strong relief liquor" and "weak relief liquor." The strong liquor was the first liquor that came over at a temperature of about 105 deg. and this did not contain so much organic substances as the weak liquor. He said that Mr. Reese had figures on the composition of the liquor.

Mr. Reese said that the sugar content of weak liquor was twice as high as that of the strong liquor but the acid concentration was inverse for strong liquors. The SO_2 was about 9.6 total, and for the weak it was about 3.8.

High vs. Low Free SO_2

C. S. B. Hawkings, of Price Bros. & Co., Riverbend, opened the discussion on high versus low SO_2. He paid a splendid tribute to the value of the book by R. N. Miller and others on **Chemistry of the Sulphite Process**, published by the Technical Association of the Pulp and Paper Industry, and quoted freely from it. He said that temperature was a dominant factor in the reactions connected with the pulping of wood by the sulphite process.

Carl D. Jentz followed Mr. Hawkings. He said that better results were obtained in cooking with high free SO_2, probably because there was better penetration of the chips, owing to gas pressure. With high SO_2, fewer screenings were noticed. Acid hydrolysis of the wood was a second factor to be considered with high SO_2.

Penetration More Rapid with High SO_2

Chairman Bryant inquired of Doctor Johnsen if he had done any work recently on the effect of high SO_2 on penetration and was told by him that he had checked up on that some thirteen years ago and found that the penetration of chips by liquor was more rapid with high free SO_2. An easier bleaching pulp also resulted and a higher yield could be expected.

E. P. Cameron gave it as his opinion that the question of high and low free SO_2 acid was only one variable in the whole picture. Aspects of the subject that interested him were the question of commercial operation and the reactions from the active cooking agent. It was apparent that a wide diversity of opinion existed concerning the ordinary commercial cooking process and definite problems existed concerning the nature of the components that the pulp manufacturer tried to save and what he wanted to get rid of.

Professor Hibbert agreed with Mr. Cameron and said that from a scientific point of view the ideal cooking liquor would be a solution of ammonium bisulphite.

E. N. Miller, called attention to an article by W. Boyd Campbell in the issue of research notes dealing with "Equilibria in Sulphite Dioxide Solutions."

Annual Luncheon

At the annual luncheon of the Technical Section, held at the Ritz-Carlton Hotel on Thursday, January 30, at 1 p.m., Royal S. Kellogg, secretary of the News Print Service Bureau, was introduced by President C. H. L. Jones as the speaker of the occasion. In addition to Mr. Kellogg, there were seated at the head table R. A. McInnis, Jesse H. Neal, George Carruthers, H. J. Buncke, H. O. Keay, W. G. McNaughton, J. S. Bates, A. P. Costigane, C. B. Thorne, Edward Beck and F. L. Mitchell.

In introducing Mr. Kellogg, President Jones referred to Mr. Kellogg's topic, "Making Newsprint Paper" saying, "It's a good subject for any one from New York to talk on. They are making the prices on newsprint for us over there. Why shouldn't they tell us how to make newsprint?

Address by R. S. Kellogg

Mr. Kellogg made an address of great interest to a gathering of pulp and paper mill chemists and engineers. We went thoroughly into the question of manufacturing costs and declared that abundant opportunities existed for scientific

control and economies in the manufacture of newsprint. He touched on new methods of treatment and the advances which might be looked for in the near future in improvements both in methods and machinery, and while admitting that the application of all the most modern methods was out of the question for many mills, still improvement was always possible and must always be striven for in all branches of the paper industry that has made such rapid advances in recent years.

Signs of Progress—After a complimentary reference to the work of the technical organizations of the pulp and paper industry, in which he said that these stood primarily for research in the field of papermaking and related problems, he touched upon the necessity of putting papermaking upon a scientific basis, "from tree to printing press." Newsprint paper, at least, was still largely made by a rule of thumb, much of it being still made in "any old way."

Wood, groundwood, sulphite, paper, steam, labor and repairs were the headings under which the speaker discussed the steps of production in detail, describing technicalities of operation and manufacture that have been successfully applied in various mills and which might be of benefit to others.

Weighing vs. Measuring Wood—In regard to wood and the prevailing custom of measuring it by volume, he said that this item which represented about 45 per cent of the cost of production should be weighed in processing. "I am unable to understand," he said, "how the efficiency of any operation can be figured with any degree of accuracy so long as its raw material is taken out by volume and its finished product goes out by weight.

"The weighing and moisture sampling of wood and chips will, I am sure, soon be a standard practice accepted by mill managers, instead of being scorned as the theory of an impractical college graduate."

Semisulphite for Newsprint—Mr. Kellogg, pointing out that in newsprint today 75 per cent or more of the constituent is raw wood and the remainder rather pure sulphite pulp, said that the Madison laboratory believes that semisulphite suitable for newsprint can be made with a yield of 75 per cent by weight instead of the present 45 per cent, and that with the use of rod mills to complete the preparation there seems to be no reason why a larger proportion of semisulphite than of normal sulphite should be required.

Labor Costs Reduced—Taking up the question of labor costs, Mr. Kellogg said: "The total labor cost in an integrated mill is between $4 and $5 per ton of newsprint. Very substantial economies have been materially effected without any reduction in wage rates.

"Very largely this has been accomplished through increased size and speed of equipment. A machine making 150 tons of paper per day requires only two more men to tend it than one which makes fifty tons. Magazine grinders may make mechanical pulp with only 50 per cent as much hand labor per ton as pocket grinders; and larger digesters take fewer men per ton of pulp in a sulphite mill.

"Taken all together, the labor inside the best modern new mills is about eight man-hours per ton of paper. There are other mills which take thirteen man-hours to make a ton of paper, but there is still too much hand labor."

Other Avenues of Economy—Continuing, he said there are a number of general plant savings, the total of which may go beyond $1 per ton even if they are only partially successful. He touched on the subjects of groundwood, paper, steam and repairs where savings could be effected.

He declared that there was reason to believe that research and experiment in the production of mechanical and chemical pulp might disclose how to make an entirely satisfactory sheet of newsprint with as low as 10 per cent sulphite content and substantial saving in cost.

"While much has been said about improvement in methods and machines, the human factor will always remain of great importance. An authority tells me that of 140,00 men in the North American paper industry, not more than 3,000 are making any effective effort to improve themselves. There is much yet to be done in the field of human engineering.

Opportunity of the Technical Man—"The recent less profitable times for newsprint have forced demands for economies and efficiencies that might otherwise have been long delayed. The technical man who can make good now has a better chance than ever before. Moreover, he is young enough to outlive many of the old timers who scorn technical methods. He is the one who may transform papermaking from an art to a science, and his award will come to the extent that he is qualified to take advantage of the opportunities on every hand.

"Progress in the manufacture of newsprint in recent years has been more rapid than in any other branch of the paper industry. This has been partly caused by the stress of competition, but more largely brought about, I believe, by the willingness of all concerned, from executive to workmen, to put their knowledge into a common pot so that each might draw therefrom the portion best adapted to the solution of his particular problem. May this spirit always continue!"

In moving a vote of thanks to Mr. Kellogg for his splendid address, George Carruthers, a former president of the Canadian Pulp and Paper Association, touched on its interesting character, and hazarded the opinion that if all came true as Mr. Kellogg saw the future of the industry, the papermaker of the new day would be a magician.

AFTERNOON SITTING

Circulating System Discussed

The members were late in assembling for the afternoon sitting it being 3 o'clock before Mr. Bryant called for a discussion of the circulating system, and introduced F. L. Mitchell, of the Abitibi Power & Paper Company, to start the discussion. It was evident that there is much work yet to be done before any accurate knowledge is available concerning the circulation of liquor during the cooking process in a digester. The liquor is moved by convection currents, the top and center zones reaching pulping condition before the bottom part of the digester. Steaming should be slow and easy during the first hour. There was a 10 per cent improvement in strength where circulation is maintained in a digester, with a small saving of steam. Experiments were being continued and it should not be long before the Abitibi Company would have something to say about the process.

The subject was further discussed by Mr. Hovey, Doctor Johnsen and Professor Hibbert.

Experiments at Hammermill Laboratories

Doctor Johnsen, at the request of the chairman, spoke of some experiments which had been made at the plant in Erie to determine zones of temperature and pressure in cooking with a 12-ton digester. Thermometers were placed at the top, about 14 ft. from the top flange, and at the bottom about 14 ft. from the bottom flange, and one was placed in the middle of the digester. The temperature curves for a period of several months and pressure of acid concentration at these three points were noted. All showed that no cooks were alike. Pulp was made as actually made in the mill at the bottom of the digester, at the top and in the middle, when it was found that there was a difference of from 44 to 48½. The bleaching quality was found to be different with bottom pulp than top pulp, being about twice as much in one case as in the other. Contrary to some figures quoted by Mr. Hovey, Doctor Johnsen found a higher temperature at the bottom of the digester than at the middle or at the top, the difference being about 8 or 9 deg. He expressed the opinion that a circulating system would increase the yield by 4 or 5 per cent and increase the strength considerably.

The technical discussions were brought to a close with an address by Dr. De Frees on the composition of chrome-nickel-iron alloys, which is reserved for publication.

Amendments to By-Laws

Certain amendments to the by-laws were submitted by the executive council and adopted. These related to the qualifications for membership in the Technical Section for the purpose of raising the standard of admission.

J. O. Mason presented the report of the Committee on Resolutions which was adopted, expressing thanks to President C. H. L. Jones for his informing opening address, to the Engineering Institute of Canada for the use of its hall and

to the permanent staff of the Canadian Pulp and Paper Association, as well as an expression of appreciation to the officers and committees of the section who have served during the year, and to others.

Officers for 1930

Nominations for officers to serve during the ensuing year were submitted by George Carruthers, chairman of the nominating committee. He announced that Mr. McInnis had agreed to continue his services for another year, and the same was true of Mr. Buncke. By rotation, the place of John Stadler on the Council would be taken by Orville F. Bryant, so that the officers and committees for 1930 are as follows:

Chairman—R. A. McInnis, Anglo-Canadian Pulp and Paper Mills, Ltd., Quebec.

Councillors—H. J. Buncke, Abitibi Power and Paper Company, Ltd., Iroquois Falls, Ont. (Term expires 1930); G. H. Tomlinson, Howard Smith Paper Mills, Ltd., Cornwall, Ont. (Term expires 1931); D. L. McLeod, Price Bros. & Co. Ltd., Kenogami, Que. (Term expires 1931); J. O. Mason, Canada Power and Paper Company, Ltd., Laurentide Division, Grand'-Mere, Que. (Term expires 1932); C. B. Thorne, Riordon Pulp Corporation, Hawkesbury, Ont. (Term expires 1932); Orville F. Bryant, Nashwaak Pulp and Paper Co., Ltd., Saint John, N. B. (Term expires 1933).

Secretary-Treasurer—Edward Beck, Canadian Paper and Pulp Association, Montreal.

Annual Dinner of the Technical Section

The closing function of the seventeenth annual meeting of the Technical Section of the Canadian Paper and Pulp Association was a dinner at the Ritz-Carlton Hotel, Montreal, on Thursday evening, January 28, which was attended by upwards of 140 members and guests. Sociality took precedence of science at this gathering and there were no set speeches, but plenty of entertainment between courses and afterwards. The dinner itself was marked by extreme simplicity, the menu consisting of soup, a roast, vegetables, salad, desert and coffee, with liquid refreshments for those who cared to partake of them.

Annual Meeting of Canadian Pulp and Paper Association

Reports of Trade Sections Indicate Growth and Expansion in all Branches—Speeches at the Banquet

WITH Col. C. H. L. Jones, O.B.E., V.D., M.E.I.C., of the Mersey Paper Company, Ltd., Halifax, N. S., president in the chair, and Secretary Edward Beck recording, the annual meeting of the Canadian Pulp and Paper Association was opened in the hall of the association's headquarters in the Pulp and Paper Research Institute on Friday, January 31, at 10:15 a. m. After a motion to dispense with the reading of the minutes of the previous meeting, President Jones read his annual address, which was later revised in some particulars. At the outset he said that "A perusal of the annual reports submitted by our several trade sections at this meeting reveals that the past year has dealt not altogether unkindly with our industry. Every section reports growth and expansion resulting in increased production."

Position of the Newsprint Industry

In reference to the position of newsprint, he said that this branch of paper manufacturing was the backbone of the industry. Although some difficulties had been encountered owing to too rapid expansion, the worst things predicted had failed to come to pass. A certain degree of stabilization was effected. The output of the mills during the year exceeded all preceding records by a wide margin, reaching the record figure of 2,728,827 tons. Not only was the domestic and United States demand greater than that of any other year, but overseas exports also enjoyed a marked increase, indicating that Canada was continuing to hold its own in the world's markets, notwithstanding that competition was growing more keen. Continuing he said:

Exports of Pulpwood too Large

"Public interest has been centered of late upon the fact that Canada is at present equipped to produce a greater volume of newsprint than the market can readily absorb. While this is true, and while it has resulted in reducing the general average of the output of the mills, based upon their rated capacity, practically no consideration has been given to the fact that every new mill built in Canada means that more of our pulpwood will be manufactured into paper in this country and less will be available for exportation to paper manufacturers elsewhere. There has been a relative decrease in the exports of pulpwood this year as compared with last. There is undoubtedly still too great a proportion leaving the country. The returns show that for the calendar year of 1929, the total shipments amounted to about 1,277,879 cords, which represents approximately 25 per cent of the total cut and compares with 1,301,200 cords, the average annual shipment for the past ten years."

Pulps in Good Demand

The report went on to indicate that considerable improvement had been shown with respect to sulphite pulp and mechanical pulp, the latter enjoying an active market at enhanced prices for the first time in five years. The book and writing paper mills produced an increased tonnage and could have filled a much greater demand. The paperboard section has assumed a place of greater importance and reports expansion.

Colonel Jones made special reference to the completion of the Pulp and Paper Research Institute and to the splendid work that has been going on there during the year, the several departments working harmoniously together, with encouraging prospects for worthwhile results.

Credits

In a reference to the work of the Joint Administrative Committee of the Pulp and Paper Research Institute, he called special attention to the services rendered by F. A. Sabbaton, H. J. Buncke, and John S. Bates. He said that attendance at the monthly committee meeting had entailed upon them a considerable outlay of time, money and effort, all of which had been given ungrudgingly without expense to the association.

Fitting mention was made in the address of the progress of the Technical Section. Under the able guidance of Chairman R. A. McInnis, the section had expanded its membership and added considerably to the accumulated knowledge of the technical branch.

Appreciative mention was also made of the work of the Woodlands Section under R. H. Nesbit's chairmanship, with a complimentary reference to A. M. Koroleff, the section's expert adviser.

Acknowledgments

After a reference to the affairs of the association itself which were shown to be in a satisfactory state, with the membership enlarged by the addition during the year of four new members, the Eastern Paper & Felt Mills Corporation, Fraser Companies Limited, Mersey Paper Company Limited and Thunder Bay Paper Company, Limited, President Jones con-

cluded with an acknowledgment of the support he had received from his colleagues of the Executive Committee and the membership at large during his two terms of office, and bespoke for his successor the same active and loyal support that had been accorded to him.

Secretary Beck Praised

Supplementary to his prepared address, Colonel Jones paid a tribute to Edward Beck, secretary-treasurer of the association, saying that only those who had held office could appreciate the excellent system that had been devised for the conduct of the association's affairs. He confessed that if it had not been for the assistance which he had received from the secretary and his efficient staff, the burden of his office would have been much heavier.

The report of the secretary-treasurer was then received. It showed a surplus of funds in the treasury of $56,149.88, with an estimated budget for 1930 of $143,665. Mr. Beck followed this with a report of the Research Corporation, in which it was noted that Ernest Rossitter had been named to succeed L. R. Wilson.

The reading of sectional reports was then taken up and as most of these had been printed and were in the hands of members they were taken as read.

Progress of Educational Work

The report of the General Committee on Education, George Carruthers, chairman, and T. Linsey Crossley, secretary, was read by Mr. Crossley, as there had been a mixup of type which had resulted in placing part of the appendix at the beginning of the report as printed. The report reviewed the progress of the correspondence courses in paper and pulp and of the classes maintained at local schools. The correspondence school of the Institute of Industrial Arts had a total registration for 1929 of 132, with 27 graduates. The total number of working students amounted to 727. From Canada, 665 students were reported and from the United States, 829. On behalf of the committee, Mr. Crossley invited the co-operation of mill executives by assistance in financing students and he read the form of understanding agreed upon, which was printed as Appendix 4.

Mr. Crossley also reported on the progress of the French translations of the textbooks on "The Manufacture of Pulp and Paper." Vol. IV was practically finished and would be ready for distribution in March, and Vol. V in June.

On motion of Mr. Carruthers, seconded by Mr. Maclachlan, the work done by Mr. Crossley in visiting mills was commended and the Institute of Industrial Arts given full credit for its part in the educational propaganda. It was moved to endorse Mr. Crossley's recommendation for the adoption of Appendix 4 of the committee report.

Jesse H. Neal Invited to Sit with the President

At this point President Jones announced that Jesse H. Neal, general manager of the American Paper and Pulp Association, was in the room and he extended an invitation to him to join Mr. Beck and himself on the platform "that is, if he would care to identify himself so closely with the Canadian Pulp and Paper Association, Col. Jones jokingly added. Applause greeted the announcement and Mr. Neal took his place on the rostrum.

At the suggestion of Mr. Carruthers, R. S. Kellogg, secretary of the joint executive committee on vocational education, was invited to make a report of textbook sales. He responded by saying that during 1929 there had been 2,429 copies of the different volumes sold, making a total to date of 21,377.

The income of the committee from royalties, bond interest and bank interest during 1929 amounted to $1,714.17, which, added to cash and securities on hand January 1, 1929, gave a total of $8,652.86. Expenses for the year 1929 amounted to $1,565, leaving a net balance on hand January 1, 1930 of $7,087.86.

Section Reports

Under Section Reports, Harold Crabtree, chairman of the Book and Writing Section, discussed conditions in that branch of the industry. While there had been an increase of tonnage of book and writing papers during 1929, amounting to 6,000 tons, it was not sufficient to take care of the full operating capacity of the Canadian mills; it represented an operation ratio of only 67.4 per cent of possible production. Importation of book paper and writing paper for the year amounted to 9,239 tons, or 13 per cent of the output of the Canadian mills. Reference was made to importations of other papers, such as cover paper, vegetable parchment and glassine. On account of the limited consumption of these special papers there would be no warrant in developing their manufacture in Canada.

HAROLD CRABTREE

President, Canadian Pulp and Paper Association

Other Reports

Reports were also presented by the Sulphite Pulp Section; A. Cross, chairman; Board, Frank R. Thorne, chairman; Mechanical Pulp, A. Stewart McNicholl, chairman; Coated Paper, F. C. McElroy, chairman; Wrapping Paper, F. J. Campbell, chairman; Felt, W. Earle Walker, chairman; Wax, Paper, John R. Marshall, chairman; Tissue Paper, George Carruthers, chairman; Newsprint, P. B. Wilson, Chairman; and special reports relating to education, technical work and pulp and paper research.

Some criticism was expressed by members at the inactivity of the Newsprint Section. President Jones remarking at one stage of the proceedings that "It has almost become a tradition in the association that we have a Newsprint Section which would not function." Still the report submitted by Percy B. Wilson, chairman of the section, contained some interesting particulars of production and consumption of newsprint during the past year, which he said, was a trying one as regards profits on operations.

The report stated that with the object of stabilizing production, dividing equitably the available orders among the mills and providing steady occupation in mill communities, the Newsprint Institute of Canada had been organized, with the approval of the premiers of Quebec and Ontario, to represent the industry. Nearly all of the mills in eastern Canada are members of the Newsprint Institute and share orders between them.

Expansion of Newsprint Industry—Mr. Wilson gave figures of expansion by the operation of new machines and the construction of a new mill by the Mersey Paper Company at Brooklyn, N. S. New mills under construction are the Dalhousie mill of the International Paper Company and the mill of the James Maclaren Company at Buckingham, P. Q. The I. P. mill will start with a daily production of 250 tons and the Maclaren mill will have a similar capacity. New machines reported included two by the St. Lawrence Paper mills and by Price Bros., and one each by Bathurst Power & Paper

Company and the Great Lakes Paper Company, the total of which represented an addition to capacity of approximately 880 tons daily.

Peak Production Last Year—Figures showed that Canadian production of newsprint for 1929 was greater than in any previous year, and the total tonnage greater than 1928 by 15 per cent, though owing to the increased capacity, the mills were only able to operate at an average of 85 per cent of rated capacity for the year. Exports of newsprint increased by almost 15 per cent over 1928, with record shipments to the United States.

In Memoriam, Warren Curtis

Under new business, F. J. Campbell delivered a eulogy of the late Warren Curtis, Jr. and offered a resolution of sympathy and condolence to be sent in the name of the association to the family of the deceased, which was adopted.

Harold Crabtree is New President

The Executive Committee having approved the nomination of Harold Crabtree, managing director of Howard Smith Paper Mills, Ltd., as president of the association for the ensuing year, he was unanimously elected and immediately assumed office. He assured the members that he appreciated the honor of election and would do his utmost to justify their choice.

Vote of Appreciation to Colonel Jones

A motion expressive of the appreciation of the association for the great services rendered by Col. C. H. L. Jones during his tenure of office was offered by George Carruthers and adopted unanimously. This closed the proceedings of the annual meeting.

Banquet Closes Canadian Convention

Notes of Conciliation, Good Will and Co-operation Sounded in Addresses by Leading Representatives of Provincial and British Governments

THE series of meetings of pulp and paper men held in Montreal during the week of January 27-31, in connection with the seventeenth annual convention of the Canadian Pulp and Paper Association, was brought to a close on Friday evening with a banquet at the Ritz-Carlton Hotel at which distinguished speakers brought emphatic messages to manufacturers of newsprint paper of conciliation, good will and co-operation as between government officials and paper and pulp manufacturers generally.

Nearly 300 person attended the banquet, with a goodly representation of guests from the United States. At the head table to right and left of Col. C. H. L. Jones, who was toastmaster, sat the guests of honor: The Hon. Rodolphe Lemieux, K.C., B.C.L., LL.D., speaker of the House of Commons; Sir William Clark, K.C.S.I., C.M.G., High Commissioner in Canada for His Majesty's Government in the United Kingdom, and The Hon. Louis Athanase David, LL.B., K.C., Provincial Secretary of the Province of Quebec. Others at the head table besides Harold Crabtree, president-elect of the association, were S. L. Willson, president of the American Paper and Pulp Association; J. H. Price, Hon. W. Frost, J. H. A. Acer, J. A. Bothwell, Hon. H. Bryn, F. J. Campbell, George Carruthers, Hon. M. Clarholm, Sir A. Currie, H. F. E. Kent, George McKee, G. H. Montgomery, L. R. Wilson and Senator J. B. White.

An Excellent Menu

While not elaborate, the menu was a triumph of selection, with Caviar Malassol, as a hors d'oeuvre, followed by a soup, fish, quail and a delicious dish of cooked celery for which the Ritz-Carlton is famous. A salad was followed by dessert and coffee, besides the usual accompaniments of a formal dinner in the chief city of Quebec Province.

"The Bugaboo of Expansion"

When the coffee was served, Colonel Jones got the attention of the diners and opened the postprandial exercises with an introductory talk in which he touched on the course of trade during the past year and paid his respects to the "bugaboo of expansion." The year 1929 had been for paper manufacturers one more terrible in anticipation than in actual experience. He suggested that, if manufacturers and publishers would occasionally go fishing together, much good might result; but he did not overlook the greater possibilities in some of the manufacturers going fishing by themselves as a starter. The bugaboo of overexpansion did not frighten him, as he knew that expansion was a good thing and the newsprint industry of Canada must keep on growing. It was "a grand, good, clean business of unlimited possibilities."

In introducing the first speaker, the Hon. Rodolphe Lemieux, he referred to him as the oldest member of the House of Representatives and a knight of the Order of St. Gregory.

A Plea for Conciliation and Good Will

Mr. Lemieux gave a most interesting and highly eloquent account of the progress of Canada since the time he entered Parliament thirty-four years ago. He expressed sincere appreciation of the opportunity to address the Canadian Pulp and Paper Association. The invitation, he said, had come to him perhaps because he represented in Parliament a vast constituency where timber resources abound or because he was the Speaker of the House of Commons, and, as such, in a position to say how the Dominion of Canada stands today.

Growth of Health in Population and Resources—Mr. Lemieux gave some striking figures showing the increase of population, revenue and resources of the Dominion during the period from 1896, when he entered Parliament, to 1930. The entire population of Canada on June 30, 1896, was 5,086,000, against 9,796,800 on June 1, 1929. In 1901 the population of Montreal 367,370 and in 1928, 1,032,385. Nearly the same ratio of growth prevailed as regards the cities of Toronto and Winnipeg.

Growth of Trade and Commerce—The total trade of Canada imports and exports, including coin and bullion in 1896 was $231,601,332. In 1929 Canada's trade was figured in monetary value at $2,779,244,939. The revenues of the Dominion had increased in similar proportion and so had the expenditures. The gross value of pulp and paper products in 1900 was figured at $3,633,257 and this had jumped in 1929 to $233,077,-236, so it was to be seen that the pulp and paper industry had made a substantial contribution to the welfare of the country.

The speaker said that, in addition to supplying the major domestic requirements, the pulp and paper industry was one of the few industries enjoying an extensive foreign market and it contributes something like $200,000,000 a year to Canada's external trade.

Touching upon the existing situation as regards higher prices for paper, he said that the expansion of the pulp and paper industry had brought with it some difficulties as between consumers and producers of newsprint paper concerning a fair market value for the commodity. There was no need to dwell upon it but he considered that there was too much common sense, too much of a spirit of fair play on both sides to jeopardize the future of a great industry. He commended Lincoln's homely saying: "If there must be a quarrel, why not settle it before than after?" and added that "wise business men will ever avoid retaliation. Conciliation is the only sound policy."

The Discovery of Canada—Mr. Lemieux gave a delightful picture of the pageant of the seasons in Canada and expressed his pride in the land, followed by a fascinating account of the outstanding events in the history of the Dominion from the time of the discovery of Canada by Jacques Cartier. In 1934, Canada will celebrate the 400th anniversary of the day the cross was planted by that hardy navigator on the heights of the Bay of Gaspe. That, Mr. Lemieux said, was the beginning of Canada.

Relations with the United States—Concerning relations with the United States, Mr. Lemieux said that there was ample room in North America to experiment two different forms of government, a republic and a constitutional monarchy. "For more than a century, we have lived in peace and amity with our American friends. Both countries, I think,

have been an object lesson to the powers of the world. The principle of arbitration has been accepted by both as the supreme law in all disputes that may arise between them. With this high conception of civilization, jealousies, bloody feuds and hatreds have lost caste forever in North America.

Great Britain's Trade with Her Colonies

In replying to the toast of "Empire Trade," Sir William Clark, British Trade Commissioner to Canada, made a plea for a combination of national trade and Empire trade. He gave some facts concerning the trade of Great Britain with her colonies that were surprising to many of his auditors. Thus great Britain takes about one-third of Canada's total exports, about one-quarter of India's, nearly half of Australia's, more than half of South Africa's and nearly 80 per cent of New Zealand's. In a normal year, about half of all her imported wheat and more than half of all her flour comes from Canada and half of her mutton from New Zealand. Australia, New Zealand and South Africa among them provide three-quarters of her wool and Canada and New Zealand more than three-quarters of her immense requirements of cheese.

As to paper and paper products, despite a growing production of newsprint paper in Great Britain, imports of newsprint are growing far more rapidly than imports of pulp. Nearly 60 per cent of the pulp consumed came from foreign countries four years ago, but it is the other way around now and imports from Canada show a great increase.

India Is Britain's Best Customer—As to exports, India is Great Britain's best customer; Australia second and the sum of consumption by Crown colonies would put them in the third place if they were lumped together and treated as a unit. The United States and Germany follow next on the list. Canada and South Africa being sixth and seventh.

A Scotch Story

The Hon. Louis Athanase David, made a reference in his speech to the present "difficulty" that existed in the pulp and paper industry in Quebec, introducing the subjects with a brand new Scotch story. Some children heard of a legend to the effect that if a penny was placed on the rail before the train passed two pennies would result by the impact of the wheel. It was done, the train passed. The children looked; there was no penny. It was the Aberdeen express!

Mr. David had been expecting to touch specifically upon the newsprint situation and he did not disappoint his audience. "I can assure those who have invested capital in the Province of Quebec," he said "that the Province of Quebec is one spot in the world that knows how to have capital respected, but, desires also that obligations shall be respected.

"You are very powerful, gentlemen. You have heard of a condition in the Provinces of Quebec which has been called a crisis—a serious exaggeration, I think. Goodwill from all concerned is about all that is needed to obtain a proper and an easy settlement of what I will call simply a difficulty. The steel business in other parts of Canada has been in the same condition, and I have yet to hear that there should be reasons for national complaints about it."

President of A. P. & P. A. Speaks

S. L. Willson, president of the American Paper and Pulp Association, was the next speaker, being felicitously introduced by the toastmaster. Mr. Willson said that on each visit to Canada he had been more and more impressed with the business acumen of the men he had met. "In thinking of Canada," he said "I have never thought of an imaginary line dividing it from the United States, but always as of a development similar to the development of States to the south of us. We need you and you need us. We particularly need your raw material.

Mr. Willson reiterated the pleasure he felt at being privileged to visit Montreal and attend the banquet of the Canadian Pulp and Paper Association. He was glad to know that his friend Harold Crabtree had been chosen head of the association, for "We presidents must stand together."

President Crabtree Speaks

The toastmaster said that Mr. Crabtree was going to be a great president of the association and he called upon him to respond.

President Crabtree made the briefest speech of the evening. In fact, he said he did not intend to make a speech but wanted simply to take the opportunity of wishing for the association a prosperous year, despite all the apparent drawbacks.

Canadian Woodlands Section Meets

Medal Presented for Best Paper on Woods Labor

THE annual meeting of the Canadian Pulp and Paper Association really started on Monday morning, January 27, with the twelfth annual gathering of its Woodlands Section. The meetings were held in the assembly hall of the Pulp and Paper Research Institute, Montreal, and continued two days, with morning and afternoon sittings.

Check Scaling Methods

At the morning sitting, on Monday, reports of officers were received and a paper on check-scaling was given by J. W. Fries, St. Lawrence Paper Mills, Ltd.

Mr. Fries' paper dealt with the methods and check scaling systems followed in eastern Canada. The wood is delivered by jobbers to a lake or stream from which it can be floated to the mill or wood handling plant. He said that up to the present time it had been customary to scale such wood on the ice, but any one familiar with woods conditions would admit that this had been far from satisfactory owing to the tendency of wood in rollways or piles to sink under the ice, thus making the scaling a difficult and uncertain matter unless scalers could be so routed as to measure each jobber's deliveries almost daily. Scaling by rollways in the bush had been adopted by several companies and numerous wood managers were investigating its possibilities with some favor.

Hardwoods for Pulp

A paper on "Hardwood Utilization, Transportation and Manufacturing" by H. S. Hill, of Price Bros. & Co., Ltd., followed. Speaking on the utilization of hardwoods for mechanical pulp, Mr. Hill said he was convinced that the use of hardwoods for pulp would increase steadily.

At the afternoon sitting, on Monday, J. D. Gilmour, of the Anglo-Canadian Pulp and Paper Mills Ltd., Quebec, was elected chairman of the section, with C. W. Alden, of Nashwaak Pulp and Paper Co., Ltd., Saint John, N. B., vice chairman, and the following members of the executive council: W. McE. Bowden, Canada Power and Paper Corporation, Montreal; M. R. Kane, Price Bros. and Co., Ltd., Chicoutimi, Que.; W. A. Delaney, Canadian International Paper Company, Montreal; C. B. Davis, Abitibi Power and Paper Co., Ltd., Iroquois Falls, Ont.; H. Kennedy, E. B. Eddy Co., Ltd., Hull, Que.

Discussion of Research

An interesting feature of the sitting was a discussion of research work done by and under the auspices of the section in 1929, dealing with improvements in chute logging, mechanical saws and towing equipment. There was a particularly interesting report on losses by sinkage, an attempt being made to reach a scientific conclusion as to the cause of sinkage, and moving pictures of various logging methods were shown.

Annual Luncheon

On Tuesday morning a business meeting for members only was held at the Institute and at noon the annual luncheon of the Woodlands Section was held in the Mount Royal Hotel, when W. D. Robb, vice president of the Canadian National Railways, made an address embodying a strong appeal for forest conservation, by means of reforestation, use of substitutes and other measures to enable production to overtake consumption and place the forests in a position to supply the needs of the country for all time.

The important part that the pulp and paper industry plays in the export trade of Canada was referred to by the speaker, who said that the $193,000,000 worth of exports in this in-

dustry does much to maintain the parity of the Canadian dollar in New York. A total of 6,328,000 cords of pulp wood worth $75,000,000 were made into products worth $185,000,000 last year, an increase of two and a half times on raw material value.

Medal to Georges Lamothe

A pleasing feature of the luncheon proceedings was the presentation of a medal to Georges Lamothe for the best paper on woods labor. The presentation was made by Col. C. H. L. Jones. J. D. Gilmore, chairman of the Woodlands Section, presided.

Meeting of News Print Service Bureau

Production Still on the Increase in Canada and Decrease Noted in United States

THE annual meeting of the News Print Service Bureau, an organization which is composed of Canadian, United States, and Mexican newsprint paper manufacturers, took place in Montreal on the closing day of the series of meetings of pulp and paper executives, engineers, chemists and foresters which started on Monday, January 27 and lasted till Friday evening, January 31. The principal business transacted was the presentation of a report by the secretary, Royal S. Kellogg, which was accompanied by charts and diagrams illustrating the increase in newsprint production both in the United States and Canada from 1913 to 1929, and 1904 to 1929, respectively, together with a tabular insert showing the average yearly increase of production from 1899 to the beginning of the present year, a period of twenty years, during which the average rate of increase was 6.8 per cent. The charts are reproduced on the opposite page.

J. A. Bothwell, of the Brompton Pulp and Paper Company, East Angus, Quebec, was chosen to head the News Print Service Bureau during the ensuing year. Other officers elected were A. E. McMaster, of the Powell River Company, Ltd., Vancouver, B. C., vice president; and an executive committee made up of J. L. Apedaile, Price Bros. & Co., Ltd., Quebec., chairman; A. R. Graustein, International Paper Company, New York; W. H. Smith, Abitibi Power Paper Company, Ltd., Toronto, Royal S. Kellogg, 342 Madison avenue, New York, was re-elected secretary-treasurer.

Newsprint Paper in 1929

In the annual report of the bureau, as submitted by Secretary Kellogg, it was noted that new records in the production and distribution of newsprint paper in North America were made during 1929. The total output was given as 4,400,000 tons. Canadian overseas exports amounted to 338,000 tons and another 100,000 tons went overseas from Newfoundland. Domestic consumption in the United States and Canada combined was approximately 4,000,000 tons.

Operation for the industry as a whole was at 84 per cent of rated capacity. New machines made ready for operation during the year had a daily capacity of 940 tons, and additional new machines expected to be ready to run before the end of 1930 will have a capacity of 720 tons more.

The detailed figures show in round numbers a production of 2,729,000 tons of newsprint in Canada last year; 1,392,000 tons in the United States; 256,000 tons in Newfoundland; and 19,000 tons in Mexico—Mexico being self-contained with respect to production and consumption. Compared with 1928, Canadian production increased 14.6 per cent, Newfoundland, 10.7 per cent, Mexican, 10 per cent, while United States production decreased 1.8 per cent. Shipments during the year totaled slightly more than production and mill stocks at the end of the year were 10,000 tons less in volume than at the beginning.

Canadian overseas shipments, increased 24 per cent and shipments to the United States 12 per cent; exports of newsprint from the United States, which long ago ceased to be an important factor, amounted to 19,000 tons in 1929, compared with 11,000 tons in the previous year. Imports of overseas newsprint into the United States, which averaged 137,000 tons yearly, 1921-28, inclusive, dropped to 96,000 tons in 1929. Stocks of white paper in the hands of the publishers were approximately 35,000 tons greater at the end of 1929 than at the beginning.

United States and Canada used a total of about 5 per cent more newsprint paper in 1929 than in 1928, bringing the per capita consumption up to new high records of 62 lbs. in the United States and 44 lbs. in Canada. These two countries combined used about 57 per cent of the world's supply of newsprint last year.

Advertising in the principal daily newspapers in the United States was about 4 per cent greater in 1929 than in 1928. Reports for the six months ending September 30 showed total circulations of daily and Sunday newspapers in the United States in excess of 66,000,000 copies—an increase of 4 per cent over the same period in 1928. Daily newspapers with circulations in excess of 100,000 copies averaged 32 pages in size during 1929, compared with 30 pages in 1928, with the Sunday issues averaging 104 pages both years. This was a new record in size of dailies but below the 1926-1927 averages for Sunday issues.

The North American newsprint industry is beginning 1930 with an average daily capacity of approximately 17,300 tons of which in round numbers, Canada has 11,100 tons, United States 5,300 tons and Newfoundland 900 tons.

New operations scheduled for the year are three in number —two machines for the Canadian International Paper Company at Dalhousie, N. B., to start in February; two for the McLaren Company, Buckingham, Quebec, during the latter half of the year; and two for the Maine Seaboard Paper Company at Bucksport, Maine, at the end of 1930.

Newsprint Institute of Canada

A meeting of the Newsprint Institute of Canada was held at the Ritz-Carlton Hotel, Montreal, on Monday, January 27, at which John H. Price, president of Price Bros. & Co., was named chairman of the board in succession to C. R. Whitehead, of the Wayagamack Pulp & Paper Company, who occupied the chair during the past year, the first year in which the Institute existed. The continuation of activities by the Institute is taken to mean that there will be continued for the year the pooling of tonnage among the various mills, so that each will receive its share in relation to its capacity, or so it is generally reported.

According to an annual report just issued, the Hercules Powder Co., Wilmington, Del., expanded both its domestic and export business last year. Net profits for the period were $4,358,904.38 as compared to $4,038,980.67 for 1928. This represents earnings of $5.95 per share on the 598,000 shares of stock after payment of preferred dividends as compared with $5.51 per share on 588,000 shares outstanding in 1928. Regular dividends of $3.00 and an extra dividend of $1.00 were paid during the year, representing an increase of 50 cents per share over dividends for the previous year.

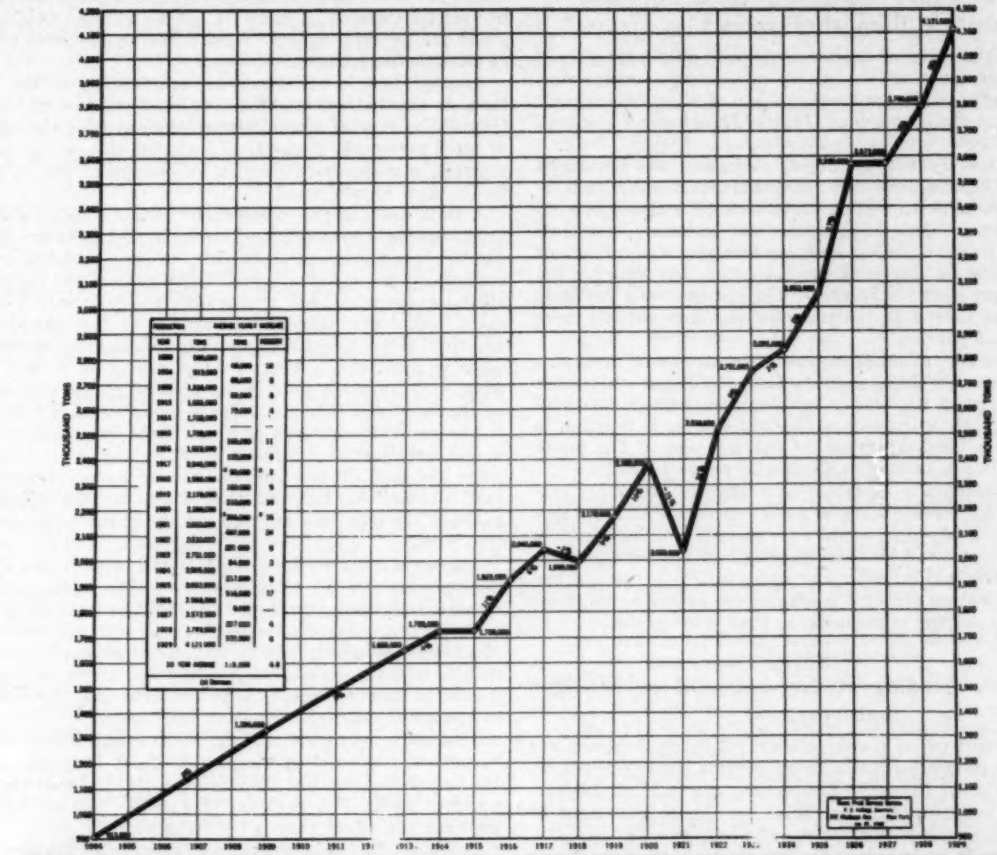
Buffalo Forge Elects Officers

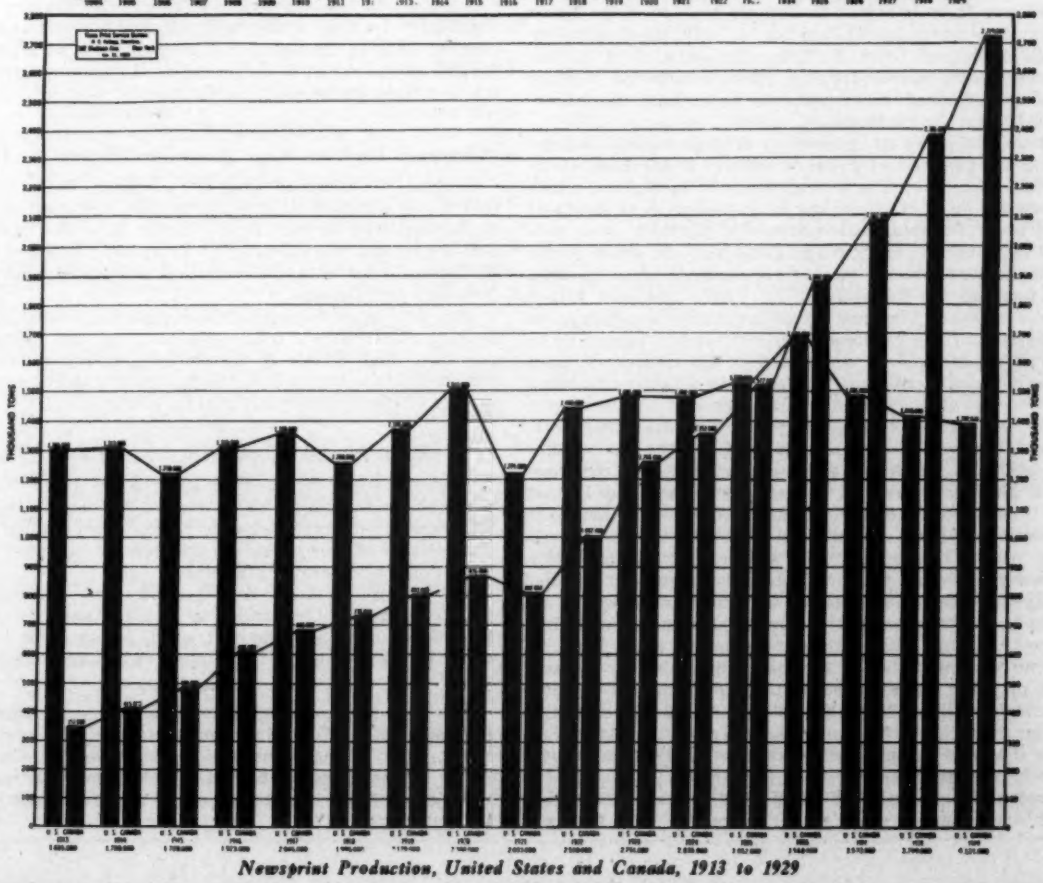
At the annual stockholders meeting of the Buffalo Forge Company, Buffalo, N. Y., January 13, the following directors were elected: Edgar F. Wendt, Henry W. Wendt, Jr., Chas. A. Booth, Herbert S. Whiting and Don R. March.

The following officers were elected by the board: H. W. Wendt, Jr., chairman of the board; Edgar F. Wendt, president; Chas. A. Booth, vice president; Edgar F. Wendt, treasurer and Herbert S. Whiting, secretary.

The Reliance Electric & Engineering Co., Cleveland, Ohio, has established an office at 207 Richardson Bldg., Toledo, Ohio, to serve Northwestern Ohio, Northern Indiana and Southern Michigan. C. E. Stine, formerly of the Detroit office, will be in charge.

W. H. Bixby, Inc., has moved its main office from Omaha, Nebr., to 1004 Hubbell Bldg., Des Moines, Iowa. This company represents the Taylor Underfeed Stokers, and Lo-Hed Monorail Electric Hoists manufactured by the American Engineering Company of Philadelphia.





Newsprint Production, United States and Canada, 1913 to 1929

Group of Paper Machinery Mfrs. Purchase Millspaugh Patents

A recent transaction of extreme interest to the paper trade is the announcement that a group of interests comprising a number of the leading manufacturers of paper machinery have purchased the Paper and Textile Machinery Company, Sandusky, Ohio.

The Paper and Textile Machinery Company was developed by W. H. Millspaugh for the manufacture of centrifugally cast bronze shells and building of suction rolls under patents by the company. Mr. Millspaugh has likewise developed certain ideas relative to papermaking whereby the entire wet end is simplified by means of the use of suction rolls for the forming and pressing of the sheet. The patents covering these new ideas also belong to the company and undoubtedly have interesting possibilities.

According to an announcement sent out by one of the members of this group, these manufacturers will not only have within their control the suction roll equipment which forms an important part of their product, but will also be in position to utilize the new ideas applying to the wet end of the paper machine which are of real value to the paper industry.

These manufacturers feel that by reason of the paper machine builder's interests being so fully represented in this new ownership, it is hoped to avoid any restraint or handicap in the full development of these ideas. Further, this arrangement will assure the paper mills the opportunity to secure the design and construction of a machine best suited to their requirements from any manufacturer they may prefer.

Co-operative Studies of Groundwood at Madison and Montreal

The newsprint paper manufacturers of North America are supporting through the News Print Service Bureau a fellowship at the Forest Products Laboratory of the U. S. Department of Agriculture, Madison, Wis., for the improvement of methods of evaluating the quality of groundwood.

As we learn from an article in Bulletin No. 144 of the News Print Service Bureau, issued January 15, 1930, the first holder of the fellowship is Lynn A. Carpenter, who, it is stated, was largely responsible for the improvement of testing methods which formed the groundwork upon which the fellowship activities are to be based.

The scientific study of laboratory control methods of determining the qualities of groundwood which are most desirable in the production of a suitable sheet of newsprint, which will be carried on at Madison and by co-operation at Montreal in the Forest Products Laboratories of Canada, is a pronounced indication of scientific progress and one which marks a real departure from the mechanical methods of early days. As set forth in the Bulletin article, during the past fifteen years the freeness test has found extensive application in the industry and has rendered excellent service, especially in making it apparent how reductions in the power required for grinding can be effected, as well as in operating to bring about a marked improvement in the degree of uniformity of the stock and its behavior on the paper machine wire. Freeness tests, however, yield little knowledge of the true quality of the pulp in its relation to those characteristics of the sheet of paper which are essential to the highest use value of that paper. In explanation of the fellowship studies, the article in the Bulletin continues as follows:

Every newsprint manufacturer will concede without argument the great value there would be for him in a detailed knowledge of those qualities of his groundwood which are essential to the production of a sheet of newsprint of desired properties. Along with that knowledge he must have, of course, an understanding of the means by which he can control his grinding operation so as to produce at will the pulp of specified quality. The fellowship studies are designed to determine just those relationships, and recent investigations indicate that new methods of testing are likely to contribute effectively to that end.

Groundwood is a mixture of fibrous particles of widely variant sizes ranging from rather coarse to very fine, and one of the tests consists of separating the pulps into fractions of various sizes of particle. It is very evident that to understand the physical nature of the pulps, the relative proportion of the fractions must be known.

Another test is an improved modification of the freeness test. It can be termed "the rate of flow" test and measures the rate of flow of water, under constant head through a mat of pulp previously formed. It includes also, as an important element, a measure of the rate of change of the rate of flow as the flow is continued.

A third test, the so-called static bending test, measures the very important properties of strength and stiffness. Inasmuch as the production and testing of hand sheets composed entirely of groundwood are difficult to perform, strength and stiffness are measured by forming the pulp into a relatively thick mat under standard conditions of forming and drying and then subjecting the dry mat to binding and breaking tests as is done in the testing of wood blocks or strips. The test may, with valuable results, be applied to the pulp or to one of the fractions obtained from it by selective screening.

The preliminary work on these tests has already indicated a mathematical relationship between the coarseness of the pulp, the rate of flow and the strength and stiffness of the mat. It may be inferred that a similar relationship exists between the test data and the quality of the paper made from the pulp.

The laboratory work essential to the preparation of the test methods and to the establishment of the mathematical relationships between test data and quality of pulp and of paper will be done at Madison in close co-operation with the Montreal laboratory, while the practical application of the results to the processes of grinding and to the development of means of control will be done at Montreal, likewise in close co-operation with the Madison laboratory.

This is pioneering work and will require patience and perseverance, not only on the part of those who are conducting the investigations, but also on the part of those who are supporting them. The prospective results, however, more than warrant the effort that is being expended.

It should be pointed out that those who have co-operated financially in this study will not be without some early benefits from it. Samples of their pulp will, as a part of the routine of the study, be subjected to the tests referred to and the test data made available to them.

General Refractories Acquires Evens & Howard

General Refractories Co., Philadelphia, Penn., announces that it has acquired all of the refractories properties of Evens & Howard Fire Brick Co., St. Louis, Mo. The purchase includes not only the refractories plants and business of Evens & Howard, but also its vast and important clay lands in Missouri and Georgia.

This now gives General Refractories Co. a total of 18 large modern plants with a total capacity of almost 1,200,000 brick per day. The Evens & Howard refractory plants will be operated as the Evens & Howard Division, and the well-known brands of the old company will be continued.

Wm. Nixon Goes with Moore and White

Announcement has been made that William Nixon, vice president and manager of production for the American Writing Paper Company, Holyoke, Mass., has resigned to accept the position of vice president and general manager of Moore and White Company, Philadelphia.

Mr. Nixon left Moore & White Company eleven years ago to go with the Chemical Paper Manufacturing Company, Holyoke, where he remained until forming his connection with the American Writing Paper Company four years ago.

The Falk Corporation, Milwaukee, Wis., announces the appointment of the following representatives: Youngstown Steel Sales, Inc., Youngstown, Ohio; Root, Neal & Co., Buffalo, N. Y. These representatives will handle Falk herringbone parallel shaft speed reducers, right angle reducers, and flexible couplings.

Program of 53rd Annual Convention of American Paper and Pulp Association, Hotel Pennsylvania, New York City

MONDAY, FEBRUARY 17, 1930

FORENOON

9:30 Standing Committee No. 1 Kraft Tape ..... Exhibit No. 3

AFTERNOON

12:30 Committee on Simplification and Standardization of Printing Papers, *Luncheon*.. Parlor C
2:30 Southern Kraft Manufacturers Association ..... Exhibit No. 4
2:30 Bag Council ..... Exhibit No. 5
3:00 Salesmen's Association Executive Committee ..... Exhibit No. 3
7:00 Glazed & Fancy Paper Manufacturers Ass'n Executive Committee, *Dinner*..... Parlor A

TUESDAY, FEBRUARY 18, 1930

FORENOON

9:30 Technical Association—*General Session* ..... Grand Ball Room
9:30 Cost Association of the Paper Industry ..... Parlor No. 2
9:30 American Waxed Paper Ass'n... Exhibit No. 4
9:30 American Waxed Paper Ass'n... Exhibit No. 5
10:00 Cover Paper Manufacturers Ass'n. Parlor No. 1
10:00 National Sulphite Paper Manufacturers Association ..... Parlor C
10:00 Salesmen's Association of the Paper Industry ..... Foyer Banquet Hall
10:00 Tissue Paper Mfrs. Ass'n..... Exhibit No. 3

AFTERNOON

12:30 Salesmen's Association of the Paper Industry, *Luncheon* ..... Banquet Hall
1:00 Glazed & Waxed Paper Manufacturers Association, *Luncheon* ..... Parlor B
1:00 National Sulphite Paper Manufacturers Association, *Luncheon* ..... Parlor C
1:00 American Waxed Paper Association, *Luncheon* ..... Balcony, Foyer
1:00 Supply & Equipment Section, Inc., *Luncheon* ..... Foyer Banquet Hall
1:00 Committee on Waste Utilization and Stream Improvement, *Luncheon*... Parlor A
2:00 Cost Association of the Paper Industry ..... Parlor No. 2
2:00 Technical Association (*Power and Mechanical Engineering*) ..... Exhibit No. 2
2:00 Technical Association (*Paper Testing*) ..... Grand Ball Room
2:00 Technical Association (*Training for the Industry Committee*) ..... Exhibit No. 6
2:30 United States Pulp Producers Association ..... Exhibit No. 3
2:30 American Waxed Paper Ass'n... Exhibit No. 4
2:30 American Waxed Paper Ass'n... Exhibit No. 5
2:30 Writing Paper Manufacturers Association (*Rag Content Paper Division*).. Parlor No. 1
4:00 Paper Bag Manufacturers Institute.. Parlor A

EVENING

7:00 Paper Bag Manufacturers Institute, *Dinner* ..... Parlor A

WEDNESDAY, FEBRUARY 19, 1930

FORENOON

9:30 Cardboard Manufacturers Ass'n. Exhibit No. 3
9:30 Cost Association of the Paper Industry ..... Parlor No. 2
9:30 Technical Association (*Power and Mechanical Engineering*) ..... Banquet Hall
9:30 Technical Association (*Paper Board*) ..... Exhibit No. 2
9:30 Technical Association (*Cellulose and Fine and Special Papers*)..... Grand Ball Room
9:30 American Waxed Paper Ass'n... Exhibit No. 4
9:30 American Waxed Paper Ass'n... Exhibit No. 5
10:00 Bristol Board Manufacturers... Exhibit No. 6
10:00 Gummed Industries Association..... Parlor A
10:00 National Kraft Paper Manufacturers Association ..... Parlor C
10:00 Woodlands Section, A. P. & P. A. ..... Foyer Banquet Hall
10:00 Writing Paper Manufacturers Association ..... Parlor No. 1

AFTERNOON

12:30 Cost Association of the Paper Industry, *Luncheon* ..... Parlor No. 2
12:30 Woodlands Section, A. P. & P. A., *Luncheon* ..... Foyer Banquet Hall
1:00 Gummed Industries Association, *Luncheon* ..... Parlor A
1:00 National Kraft Paper Manufacturers Association, *Luncheon* ..... Parlor C
1:00 Paper Makers Advertising Club, *Luncheon* ..... Parlor B
1:00 Sulphite Waste Utilization Sub-Committee, *Luncheon* ..... Roof
1:00 American Waxed Paper Association, *Luncheon* ..... Roof
2:00 Technical Association (*Corrosion*) Banquet Hall
2:00 Technical Association (*Coated Paper*) ..... Exhibit No. 2
2:00 Technical Association (*Physical Standards for Pulp*) ..... Grand Ball Room
2:30 Southern Kraft Manufacturers Association ..... Exhibit No. 3
2:30 American Waxed Paper Ass'n... Exhibit No. 4
2:30 American Waxed Paper Ass'n... Exhibit No. 5
2:30 Writing Paper Manufacturers Association (*Sulphite Bond Division*).. Parlor No. 1

THURSDAY, FEBRUARY 20, 1930

FORENOON

9:30 Technical Association (*Stuff Preparation*) ..... Parlor No. 1
9:30 Technical Association (*Sulphite*). Parlor No. 2
9:30 Technical Association (*Alkaline Pulp*) Parlor B
10:00 American Paper and Pulp Association, *Annual Meeting* ..... Banquet Hall

AFTERNOON

12:30 Technical Association, General Session and *Luncheon* ..... S. E. Ball Room
1:00 Binders Board Manufacturers Association, *Luncheon* ..... Parlor A
2:30 American Paper and Pulp Association, *Annual Meeting* ..... Banquet Hall
2:30 Tissue Paper Mfrs. Ass'n..... Exhibit No. 3

EVENING

7:00 American Paper and Pulp Association, *Reception* ..... Foyer Grand Ball Room
7:30 American Paper and Pulp Association, *Annual Banquet* ..... Grand Ball Room

The West Promenade off the Registration Foyer will be used during the Convention by the Import Committee of the American Paper Industry and the National Waste Utilization and Stream Improvement Committee.

Tentative Program of Annual Meeting of Technical Association of the Pulp and Paper Industry

Hotel Pennsylvania—New York, February 18-20, 1930

MONDAY, FEBRUARY 17

Meeting of the Executive Committee
Special Committee Meetings can also be arranged

TUESDAY, FEBRUARY 18

9:30 a. m. **General Session**—P. H. Glatfelter, chairman
Address of the President
Report of the Secretary-Treasurer
Presentation of Resolutions
Committee Reports
Relation of Institute of Paper Chemistry to the Paper Industry, by Otto Kress
Light, a New Measuring Rod for Paper, by Frederick A. Pearson
Vacuum Forming Automatic Paper Machine, by W. H. Millspaugh

2:00 p. m. **Power and Mechanical Engineering**—John F. Rhoades, chairman
Committee Report
Efficient Drying of Paper, by E. W. G. Cooper
Graduated Temperatures in Paper Drying, by C. F. Rasmussen
Some Paper Machine Room Heat Balances, by A. E. Montgomery
Friction of Pulp Flowing Through Pipes, by Committee

2:00 p. m. **Paper Testing**—B. W. Scribner, chairman
Committee Report
The Use of Chemical Microscopy in the Paper Mill, by K. P. Geohegan
New Wrinkles in Paper Testing, by E. Sutermeister
A Method of Determining the Volumetric Composition of Paper, by Parker K. Baird and C. E. Hrubesky
A Study of the Bursting Strength Test by F. T. Carson
Chemical Methods, by P. F. Wehmer
Water Resistance, by P. W. Codwise
Ink Resistance Subcommittee, Grease Resistance Subcommittee

2:00 p. m. **Training for the Industry Committee**—Harold G. Noyes, chairman

WEDNESDAY, FEBRUARY 19

9:30 a. m. **Power and Mechanical Engineering**—John F. Rhoades, chairman
Vertical Jet Combustion in the Paper Industry, by Douglas Henderson
Modern High Pressure Steam Plants, by J. B. Crane
Stokers in the Paper Industry, by Samuel M. Green
Process Steam, by F. E. Winslow
Sluicing of Ashes, by F. B. Allen

9:30 a. m. **Cellulose and Fine and Special Papers**—John L. Parsons and Jessie E. Minor, chairmen
Committee Reports
Durability vs. Permanence of Paper, by Helen U. Kiely
Literature Review of Permanence, by Maxwell D. Bardeen
Artificial Aging as a Means of Determining Permanence, by E. O. Reed
Fiber Differences, by Bjarne Johnsen
Chemical Test for Permanence
The Mercerization Test for Alpha Cellulose, by T. C. Bentzen

9:30 a. m. **Alkaline Pulping Methods and Waste**—E. S. Hinman, chairman
Committee Report
Critical Temperatures in Sulphate Pulping, by Forest Products Laboratory
Pulp Washing on Vacuum Filters, by H. A. Morrison
The Measurement of Sulphite Pollution in Sea Water, by H. K. Benson
Developments in White Water Utilization, by C. M. Baker

2:00 p. m. **Corrosion**—J. D. Miller, chairman
Committee Report
Ferrous Alloys in Sulphite Mills, by A. Christensen
Corrosion Resisting Alloys in the Paper Industry, by W. M. Mitchell
A Suitable Composition for a Sulphite Resistant Alloy, by T. H. Nelson
Inspection and Insurance of Pressure Vessels, by W. N. Halsey

2:00 p. m. **Physical Standards for Pulp**—D. E. Cable, chairman
Committee Report
A Proposed Method for Strength Testing of Wood Pulp, by Ivar Lundbeck and H. A. Rothchild
A Flow Rate Method of Pulp Evaluation, by E. R. Schafer and L. A. Carpenter
Report on Evaluation of Certain Species of Pulpwood, by W. H. Monsson and G. H. Chidester

2:00 p. m. **Paper Board**—C. C. Heritage, chairman
Committee Report
Papers to be announced

THURSDAY, FEBRUARY 20

9:30 a. m. **Stuff Preparation**—G. K. Spence, chairman
Committee Report
Stuff Preparation, by C. Nelson Gain
Beating Problems, by Ray A. North
High Yield in Straw Paper Making, by L. M. Booth
Centrifugal Separation in Stuff Preparation, by Sven C. Lindberg
Artificial Grindstones in Groundwood Manufacture, by J. H. Slater

9:30 a. m. **Sulphite**—R. N. Miller, chairman
Committee Report
Further Studies in the Semi-Sulphite Process, by C. E. Curran, W. H. Monsson and G. H. Chidester
Chemistry of Neutral Sulphite Pulping Process II, by Mark W. Bray
Effect of Bleaching Variables on Strength Properties of Easy Bleaching Sulphite, by Parker K. Baird, and R. H. Doughty

(Continued on next page)

Tentative Program of TAPPI Annual Meeting

Hotel Pennsylvania—New York, February 18-20, 1930

THURSDAY, FEBRUARY 20
(Continued from previous page)

Sulphur Burner Operation, by Charles M. Cooper

9:30 a. m. **Special Closed Meeting of Coated Paper Committee**—Norman Clark, chairman
All specially interested in coating paper problems are invited to attend and participate

12:30 p. m. **Second General Session**
Report of Nomination Committee
Election of Officers
Resolutions
A Method for the Determination of the Volumetric Composition of Paper, by Parker K. Baird and C. E. Hrubesky
The Relation of Sheet Properties to Fiber Properties through a Sheet Structure, by C. C. Heritage and R. H. Doughty
Industrial Relations, Safety and Health, by Roderick Olzendam
Permanence and Durability Committee Report, by F. C. Clark

NOTE: Committee chairmen are requested to give during the first general session, a brief report of actual accomplishments and plans of the committee. A more detailed report may be given at the meetings under the direction of the committees, at which time definite action on projects may be taken and resolutions prepared for presentation at the second general session on Thursday.

Cost Association of the Paper Industry

Program of Annual Meeting at Hotel Pennsylvania, New York, February 18 and 19, 1930

Morning Sitting, Parlor 2

Tuesday, February 18—9:00 to 9:45 a. m.—Registration, followed by papers and discussions.

Address of Welcome, by President Ralph B. Hersey, Hollingsworth & Vose Company, Boston, Mass.

Personnel Problems in Management. Paper by Earl B. Morgan, consulting management engineer, Philadelphia.

Joint session with Salesmen's Association of the Paper Industry, in banquet room foyer at 11:00 a. m.

An Approach to a Marketing Problem. Paper by Irving Fellner, publishing director of "System."

Adjournment for luncheon.

Afternoon Sitting, Parlor 2

At the afternoon sitting, beginning at 2:00 p. m., there will be papers and discussions as follows:

Standard Costs, What They Are and How to Use Them, by Eric A. Camman, C. P. A., partner, Marwick, Mitchell & Co., New York City.

Fire Insurance and the Accountant, by Prentiss B. Reed, assistant manager, Phoenix Assurance Company, Ltd., New York City.

The afternoon sitting will conclude with a business meeting beginning at 4 o'clock.

Third Sitting, Wednesday Morning

The day's proceedings will begin with an open forum at half past 9 o'clock, followed by an address by J. A. C. Kavanagh, statistician, American Paper and Pulp Association on The Census of Distribution and the Pulp and Paper Industry.

At 11 o'clock, George S. May, president, George S. May, Inc., Chicago and New York City, is scheduled to talk on Bonuses and Their Uses to Decrease Costs and Increase Profits, followed by discussion.

There will be a special luncheon for executives at 2:30 p. m. under the chairmanship of Col. B. A. Franklin, vice president, Strathmore Paper Company, Mittineague, Mass., when addresses will be made as follows:

The Outlook for General Business and the Pulp and Paper Industry in 1930, by Dr. E. O. Merchant, statistician, G. H. Mead Company. Putting Profit into Paper, by A. W. Ramsdell, Batten, Barton, Durstine & Osborn, Inc., advertising agents, New York City.

Annual Reception and Banquet

From all indications, the reception and banquet will be not only the crowning social event of "Paper Week," but one of the most interesting events as well. The dinner will be held in the banquet hall of the Hotel Pennsylvania, Thursday evening, February 20th, and those who desire to attend should not delay sending in their reservations to Jesse H. Neal, general manager of the association.

The principal speaker will be Col. William J. Donovan, formerly Assistant Attorney General of the United States, and during the War, Colonel of the famous 69th Regiment of New York. Charles Milton Newcomb of Cleveland, will discuss the subject, "The Psychology of Laughter," and the Rev. Nehemiah Boynton, who is well-known to the members of the association, will deliver one of his inspiring messages. Novel entertainment features are also promised, but guarded with secrecy.

Annual Meeting of Salesmen's Association

The Salesmen's Association of the Paper Industry will hold its annual meeting at the Hotel Pennsylvania, Seventh avenue and Thirty-third street, New York, on Tuesday, February 18.

The principal speaker, following the business sitting which opens at 10:00 a. m., will be Irving Fellner, publishing director of System, who is expected to give a most constructive talk. The title of his address, which will be illustrated by charts, is "An Approach to a Marketing Problem"; embodying a discussion of the methods used to solve a specific marketing problem, with sufficient emphasis on general principles to point the way to their application to other marketing problems.

An invitation has been extended to the members of the Cost Association of the Paper Industry to join the salesmen of the industry in hearing Mr. Fellner's address.

The Committee on Program for the annual meeting of the Salesmen's Association of the Paper Industry consists of A. R. Melker, chairman, George S. Johnston, Arthur Schroeder, Melvin Pray and C. H. Woods.

Annual Luncheon—As speaker at the annual luncheon this year, the Program Committee has secured Willard M. Kiplinger, head of the Kiplinger Washington Agency, who will discuss Washington affairs from the point of view of the business world.

The luncheon will take place at noon on Tuesday and tickets are available to members at $3.50 each.

The Joint Committee on Approved Pulp Testing Chemists, with headquarters at 18 East Forty-first street, New York, has registered William K. Kidder, Allied Paper Mills, Kalamazoo, Mich., as a mill pulp testing chemist, effective from January 9, 1930.

Buffalo Steam Pump Holds Election

The stockholders of the Buffalo Steam Pump Co., Buffalo, N. Y., held their annual meeting January 14th, at which the following directors were elected: Edgar F. Wendt, Henry W. Wendt, Robert G. Nye and Amos G. Peterson.

The directors elected as officers: Edgar F. Wendt, president and treasurer; Henry W. Wendt, Jr., vice president; Amos G. Peterson, secretary and Robert G. Nye, factory manager.

Government Investigations of Paper

Interesting Information on Newsprint Furnish Given in Report of Technical Director of Government Printing Office

IT is of interest to note in the annual report of the Public Printer for 1929, issued from the United States Government Printing Office, Washington, early in January, 1930, a reference to a proposed government use of cornstalk paper. In the proposals for paper supplies cornstalk paper is listed under "Plant-Fiber Machine-Finish Book." The specifications for this paper require stock of not less than 50 per cent bleached fiber from corn or cotton stalks, flax or cereal straws, wild or cultivated grasses, or from plants of like nature. The remainder of the furnish is to consist of bleached chemical pulp.

It is explained in a note under the specifications of this paper, described as lot No. 16, that the object of inviting proposals to supply it is to encourage a commercial production of paper made from domestic corn and cotton stalks, flax and cereal straws, wild and cultivated grasses, and other plants not now used in making paper, but in the annual report of the Public Printer it is stated that the proposal for a supply of 200,000 lbs. of this particular paper is intended especially to encourage the commercial production of paper from cornstalks.

The report of the Technical Director of the Government Printing Office, who is Byron L. Wehmhoff, of Washington, successor to Edward O. Reed, who resigned October 15, 1929, to go with Crane & Co., paper manufacturers, Dalton, Mass., contains several items of interest to readers of THE PAPER INDUSTRY. Thus, under Newsprint, a summary is given of the test results on samples in an investigation of quality. Being intended for general circulation, the report of the Technical Director gives information concerning the furnish of the sheet which may seem of an elementary character to our readers but some of the details may be useful for reference, and this part of the report is accordingly reproduced herewith.

Stock or Fiber Content of Newsprint Paper

The fibrous constituent of newsprint paper is wood pulp made almost exclusively from the coniferous species, such as spruce and fir. The wood pulp is of two kinds, the mechanical or "groundwood" and the chemical or "sulphite."

The groundwood pulp is produced by grinding the wood against rapidly revolving grinding stones without the use of any chemical, only water being used to carry the loosened wood fibers from the grinding stones. This pulp has relatively short fibers but, due to the method of manufacture, has absorptive and other characteristics which are essential in newsprint paper.

Sulphite pulp is made by cooking chips of the wood with bisulphite acid liquid at a high temperature and pressure. This pulp has a long and strong fiber and is almost pure cellulose. Most newsprint contains approximately 20 to 30 per cent sulphite pulp and the remainder is groundwood pulp.

The fiber analysis showed only eight of the standard newsprint samples to contain over 30 per cent sulphite pulp. The highest sulphite pulp content was 40 per cent and the lowest 15 per cent.

Under the special and colored newsprint the highest sulphite content was 50 per cent and the lowest 5 per cent. Only four samples of the special and colored newsprint samples contained over 30 per cent sulphite, including the samples of rotogravure paper.

The fiber content was determined by the count method and only groundwood and unbleached sulphite (coniferous chemical wood) pulp were found to be present in any of the samples.

Ash

The ash determination furnishes information as to the ash of the fiber itself and any ash from the water, color, alum, sizing materials, or clay used.

The cellulose fiber used in the manufacture of paper contains a small percentage of natural ash, the amount varying according to the particular class of fiber. Groundwood pulp contains approximately 0.8 to 1 per cent ash and unbleached sulphite pulp from 0.48 to 1.25 per cent.

The ash of newsprint paper, owing due to the "groundwood" and sulphite pulp, water, alum, color, etc., would be less than 2 per cent.

The ash content of the samples of standard newsprint varied from 0.3 per cent to 2 per cent and that of the special and colored newsprint, not including the two samples of rotogravure paper, from 0.3 per cent to 8.2 per cent. The ash of the samples of rotogravure paper was 18.2 per cent and 14 per cent.

Thickness

The results of tests for thickness show considerable variation, ranging from 0.0029 inch to 0.0042 inch for standard newsprint and from 0.0029 inch to 0.0039 inch for the special and colored newsprint, not including the two samples of rotogravure paper which were 0.0025 and 0.0028 inch in thickness.

Assuming that the thickness of standard newsprint should be 0.0032 inch and allowing a variation of 0.0002 inch above or below this figure, or 0.0030 to 0.0034 inch, 142 samples, or 56 per cent of the samples, tested are within the maximum and minimum limits. This does not include the two samples of rotogravure paper.

Weight

The basis ream weight for standard newsprint is 24 by 36, 500 sheets, 32 pounds, and allowing a 10 per cent variation, 5 per cent above or below, should be not less than 30.4 pounds nor more than 33.6 pounds.

The results on the samples of standard, special, and colored newsprint, not including the two samples of rotogravure paper, showed a minimum ream weight of 29.6 pounds and a maximum weight of 36.9 pounds. Ninety-two per cent, or 233 samples, were within the 5 per cent variation above or below 32 pounds per ream basis.

Bursting Strength

The bursting strength of the samples of standard, special, and colored newsprint varied from 7.5 to 13.5 points.

Tensile Strength and Stretch

The tensile strength was measured with a Schopper tensile-strength tester. The strips of paper were cut 15 millimeters in width in both the machine and across machine directions and tested with the clamping jaws set 100 millimeters apart. The test results were recorded in kilograms. These results have also been calculated to tensile strength in pounds on the basis of a strip 1 inch in width. The following give the maximum and minimum tensile strength tests on the samples tested:

	Kilograms per 15 mm. width		Pounds per inch width	
	Minimum	Maximum	Minimum	Maximum
Machine direction	2.08	4.09	7.76	15.24
Across machine direction	1.04	2.21	3.88	8.23

The stretch was determined at the same time as the tensile strength and is expressed in per cent. The following are the maximum and minimum results obtained:

	Minimum	Maximum
	Per cent	Per cent
Machine direction	0.3	2.8
Across machine direction	0.6	2.8

Resistance to Penetration by Printing Ink

The resistance to penetration of printing ink was deter-

mined by measuring the time required for the penetration of castor oil. This test was made by floating a sample 2 inches square on the surface of castor oil under uniform temperature and relative humidity conditions and noting the time required for complete saturation. The sample was exposed with both the wire and felt sides of the paper floated on the oil and the results reported separately in order to determine the variation in oil penetration from the wire and felt sides of the paper.

This test is considered important, as it furnished an indication of the ink-penetration quality of the various samples. The results of considerable investigational work conducted by the technical division of the Government Printing Office on various types of printing papers, including newsprint, machine finish, supercalendered book, and mimeograph paper, indicate that this test furnishes reliable information as to the probable ink penetration of the paper on the printing press or mimeograph machine.

Castor oil is used in making this test since it was found to give results similar to those obtained with the various vehicles used in the manufacture of newsprint ink. Castor oil, United States Pharmacopoeia quality, can be readily secured of uniform quality for use in making this test. It is difficult to obtain uniform quality oils and ink-making varnishes for use as a testing medium; because of the rapid penetration of the lighter vehicles, such as mineral oils, it is impossible to obtain a satisfactory end point.

The results on oil absorption showed a wide variation in the resistance of the different samples to the penetration of castor oil. It will be noted that, although there is no uniformity as to which side of the paper is more resistant, the felt side usually possesses the better oil resistance.

The range of oil penetration on the samples of standard, special, and colored newsprint tested is shown in the following table:

	Minimum	Maximum
	Seconds	Seconds
Wire side	26	145
Felt side	29	296

Porosity or Air Permeability

The test for porosity on the samples tested was made with a Gurley densometer. This test consists of measuring the rate of penetration of 100 cubic centimeters of air through the sheet of paper. Only a limited number of samples were tested in this respect. It is planned to conduct further tests for this quality, using different types of testing equipment.

It is interesting to note, however, that on the samples of newsprint tested for porosity, the curve of results is similar to the oil-penetration results obtained with castor oil, and it appears that the determination of porosity of newsprint paper may furnish an indication as to its ink-resistant qualities. The range of porosity as shown by the results of tests on all samples was, minimum, 10 seconds; maximum, 360 seconds.

Conclusion

This tabulation of test results on newsprint presents a very comprehensive survey as to the quality of newsprint being used today by the newspaper publishers. It will furnish an excellent basis for conducting further research on newsprint in order to determine and standardize the essential qualities which must be controlled to obtain the most satisfactory and economical newspaper printing.

To the publisher, the printing quality of newsprint is the most essential consideration, and this quality is controlled chiefly by finish, thickness, and relationship to newsprint ink. The publisher is interested in the strength of the paper to the extent that it shall possess sufficient strength to give maximum production on the printing presses with a minimum of breaks. From the standpoint of uniformity and cost, the control of the basis weight of the paper within a specified tolerance is important.

The difficulty being experienced with penetration of printing ink is probably the most serious. The results of the tests on the samples submitted show a wide variation in oil resistance, and apparently very little attempt has been made on the part of the paper manufacturer to control this property in newsprint. It is not possible, however, to draw any definite conclusions from this tabulation as to the factors which should be controlled in order to obtain the least penetration of the ink, or to set a definite requirement as to this property, without comparative practical printing tests.

The investigation as to oil penetration indicates that the oil follows the spaces between the fibers first and then enters the channels of the fibers. The samples with the highest porosity to air, which is due to the more open formation of the fibers in the sheet, also have the lowest resistance to the penetration of the oil.

If the stock in a newsprint should be refined or jordaned, the formation of the sheet will be closer than if the stock is fed direct to the paper machine from the mixing tanks after being passed through screens. The closeness of the formation of newsprint will depend on the character of the fiber, the addition of clay or loading, the distribution of the fibers on the paper-machine wire, and the speed of the paper machine.

The particles of clay or loading added to paper are of small size and will occupy the spaces which cannot be closed up by the larger fibers. Furthermore, clay is not as elastic as the fiber, and after the paper passes through the calenders it will remain in its forced place and close in the sheet; the penetration of oil through the sheet will, therefore, be rendered slower and the resistance to oil increased.

It will be noted that some of the samples of special newsprint containing more than 2 per cent of ash show a better oil resistance than the samples of standard newsprint containing less than 2 per cent ash. However, the fiber in some of these papers indicated that it had been treated differently than in most samples of newsprint and may also account for the lower oil absorption.

The thickness of the samples tested showed considerable variation and the surface or finish showed similar variations. It is evident that paper with a uniform thickness would be most satisfactory. It is customary to state that the thickness of standard newsprint is approximately 0.0032 inch, but further work is suggested before any definite thickness be adopted, and an expression of opinion from both the paper manufacturers and publishers should be secured.

Only a limited number of samples were tested for gloss, all of which showed less than 41.5 per cent. The gloss of the rotogravure sample tested was approximately 60 per cent, which is the average on a supercalendered book paper.

A bursting strength of 10 points is commonly considered the standard for newsprint. However, it will be noted that many samples having a bursting strength below 10 points, possess a tensile strength as good or better than other samples having a bursting strength of 10 points or more.

From the results of this investigation it is our opinion that the tensile strength is more satisfactory for measuring the strength of newsprint than the bursting strength and is recommended for consideration in this connection.

One particular difficulty which has been brought to our attention by several newspaper publishers is the contamination of newsprint ink with paper lint. Newsprint is a soft paper, the fibers of which are very easily loosened by slitting or friction on the edge of press bars. Consequently, there is considerable paper dust or fiber in the air when a newsprint press is operating at high speed.

It is suggested that if suction boxes were installed at the point of paper slitting, and any other places where paper dust is liberated on the press, considerable of this difficulty could be eliminated. The installation of dust collectors has been observed on rotary presses in England; as a result, practically all complaint due to paper lint has been eliminated.

In order to insure the minimum breaks of newsprint paper on a printing press, the paper should not contain too low a percentage of moisture. Any paper will be more flexible and will stand more strain without breaking if it contains a reasonable percentage of moisture. Such paper will also give better printing results. For newsprint, the best results will be obtained with a moisture content between 8 and 10 per cent.

Paper Investigations by Bureau of Standards

Determination of Wool Fibers in Roofing Felts—There appears to be some question as to whether the proportion of wool fibers in roofing felts can be correctly determined by the usual microscopical methods without using a conversion factor. At the request of a commercial paper testing laboratory, which stated that widely divergent results had been obtained on a sample of wool-cotton felt by three different laboratories, using both chemical and microscopical methods, the tests were repeated by the Bureau of Standards. The chemical tests were made by both the caustic soda and the nitrogen methods commonly employed for textiles. Following are the results:

	Commercial Laboratories			Bureau of Standards		
Method	Micro.	Micro.	Chem.	Micro.	Chem. Caustic Soda	Chem. Nitrogen
Per cent Wool	30	20	40	15	44	40

It is possible that the great difference in the cross-sectional areas of wool and cotton fibers causes an error when the microscopical fiber estimation method is used. Some measurements of the fibers contained in this sample indicated that the cross-sectional area of the wool fibers was approximately four times that of the cotton fibers. This difference would largely account for the relatively low values obtained for wool by the microscopical determination, and suggests the need of a conversion factor for obtaining correct results when the determinations are made in this way.

Gloss and Opacity Standards—For testing and standardizing instruments used to measure gloss and opacity of paper, the use of standards which do not change materially with age and which will withstand handling and cleaning is advantageous. The bureau has recently completed sets of such standards for its use, made of glass. For gloss, the surfaces of plates of milk glass were ground to various degrees of roughness. The gloss values for the standards are, approximately, 95 per cent, 84 per cent, 43 per cent and 20 per cent. The opacity standards were made in a similar way except that milk glass was used for the most opaque standard only, the other two being made of ordinary window glass. The three opacity standards have opacity values of approximately 92 per cent, 39 per cent and 11 per cent.

Adhesion of Postage Stamps—Continued study of envelopes resistant to adhesion of postage stamps has revealed some interesting facts. Twenty samples of resistant envelopes were tested for degree of sizing (Dry Indicator Method), and for nature of sizing. For purposes of comparison, a number of envelopes that were similar in appearance and finish but not resistant to stamp gum were included. All of the starch-sized papers were resistant. None of the resistant papers were glue-sized. Other results were:

	Degree of Sizing (Dry Indicator Method)	
	25 seconds or more	Less than 25 seconds
Resistant Samples	13	1
Non-resistant Samples	1	4

These results indicate that starch-sized papers, glue-sized papers, and rosin-sized papers behave differently as regards the adhesion of stamps. The starch-sized papers are generally unsatisfactory, the glue-sized papers are generally satisfactory, and the resistance of rosin-sized papers depends largely on the degree of sizing. Apparently for this class of papers, the degree of sizing should not be above 24 seconds (Dry Indicator Test). All of the papers tested had excellent writing qualities, which suggests that a lesser degree of sizing would serve.

Permanence of Papers—In response to urgent demand from a number of sources—paper manufacturers, paper dealers, librarians, publishers, scientific organizations, and the public in general—the Bureau of Standards instituted a research to find more definite information on the permanence qualities of papers used for written and printed records, and on the preservation of such records.

The program adopted was (1) tests of the current commercial rag fiber and wood fiber products including the fibrous raw materials, (2) tests of similar papers made in the bureau paper mill and therefore having a definitely known history, (3) inspection and testing of papers of known age, (4) study of means of overcoming influences found to be harmful to the life of papers, (5) research to find the nature of the reaction of paper celluloses to deteriorating influences.

Some work has been done on item 1, and a progress report published as bureau Research Paper No. 107, "A Study of Purified Wood Fibers as a Papermaking Material."

Item No. 2 of the program is now being proceeded with. The types of papers to be made are, (1) sulphite-soda book, (2) sulphite bond, (3) bond made from purified wood fibers, (4) five grades of rag writing and bond papers using all the various grades of rags. The objectives of this work are, (1) to make the best papers possible from the various fibrous materials so as to obtain a more exact comparison of the papermaking quality of the raw materials than is possible with commercial papers, (2) to introduce variables suspected of being harmful, such as over-bleaching, high acidity, and over-beating, for the purpose of observing their effects on the different fibrous materials.

Intensive study of items (3) and (4) has been made presently possible by a fund granted by the Carnegie Foundation, which is particularly interested in the preservation of publications. This fund is being administered by the National Research Council. Surveys of public libraries to correlate deteriorative effects with storage conditions are in progress, and laboratory studies of the deteriorating effects indicated by the library surveys are being initiated.

The obvious point of attack on item (5) is to find more definitely the nature of the products formed by degradation of cellulose. With this information, it will be in line to study the mechanism of the degradation. A knowledge of these facts will enable us (a) to inhibit or delay degradation or (b) to predict whether or not degradation will occur. Fundamental, physical and chemical studies of cellulose are being initiated for this phase of the work.

Container Corporation Acquires Sefton Plant

Container Corporation of America adds to its organization one of the oldest manufacturers in the packaging industry in the acquisition of the Sefton Manufacturing Corporation, recently effected. The absorption of Sefton brings to Container Corporation additional annual business of approximately $5,500,000 a year and will make the 1930 total approximately $23,000,000, Walter P. Paepcke, president, estimates.

Container Corporation was formed in 1926. Although in business less than four years, it is to-day the largest producer of boxes and containers in the country. It has led in the production of boxboard, solid fiber and corrugated containers and test liners. The Sefton acquisition will bring it additional business in this field, and also give it a complementary line of products in a field which Container has not previously touched, the manufacture of folding boxes, waxed cartons, suit boxes, display cartons, paper pails and other boxes so extensively used to-day.

Container Corporation plants are located at Chicago; Kokomo and Anderson, Ind.; Cincinnati, Circleville and Cleveland, Ohio; Fairmont and Charleston, W. Va.; Bridgeport, Conn.; Natick, Mass., and Philadelphia. Branch sales offices are located all over the country.

Sefton will add to this group three fabricating plants, located at Chicago, Anderson, Ind., and Brooklyn. The Brooklyn plant will bring Container more ready access to the large metropolitan area of New York.

The Sefton company also brings to Container the Dixon Board Mills, Inc., located at Carthage, Indiana, producing 30,000 tons of paperboard annually. These mills filled approximately half of the raw material requirements of the Sefton Manufacturing units, leaving a large tonnage requirement for raw materials which can be filled by existing Container Corporation mills.

The entire personnel of the Sefton company will be retained by Container and Wesley M. Dixon, president, will become a director of Container Corporation.

The Sefton Manufacturing Company was one of the first manufacturers of merchandise packages. A predecessor company began operations in Anderson, Ind., in 1888. Its first products were wooden butter dishes and handmade oyster

pails. The company moved to Chicago in the next year and entered upon the manufacture of corrugated board and packaging specialties.

Its history includes nearly all of the developments which have revolutionized merchandise packaging. The corrugated box was first adopted by industry generally in the early years of the company's development, and it was an early leader in the field. The employment of individual consumer packages of many types of merchandise has been a development of the past few decades, and Sefton in common with other members of the packaging industry was a participant in this development.

The packaging industry has shown since 1900 an annual growth of from 6 to 12 per cent, and the Sefton company has kept pace with the growth of the industry.

Container Corporation acquired the assets of Sefton Manufacturing Corporation and Dixon Board Mills, Inc., from Sefton, Inc., the holding company, giving in exchange 117,514 shares of Class "A" stock.

"Many advantages will accrue to the Container Corporation of America from these acquisitions," Mr. Paepcke said in announcing the details of the transaction. "In the first place, we are acquiring properties with a value of $5,000,000 in exchange for a block of our Class "A" stock of a parity value of $2,340,000. We also, through this transaction, extend our operations into new large fields without the usual heavy expense of development of the field.

"The Sefton company is well-known in its particular field. The company has been strengthening its position during the past three years, particularly since acquisition of the Dixon Board Mills in July, 1927. The combined profits of these units since their combination was effected have been on the upward trend and I anticipate a very favorable profit will be shown by these new units for the current year."

Mr. Dixon, president of Sefton, made the following statement: "The consolidation with the Container Corporation will not only give us sources of supply on our raw materials that we have been unable to manufacture through lack of mill capacities, but in addition will make possible almost immediately our program for future expansion. We experienced an unusual demand for the many types of boxes and cartons we manufactured last year with shipments going ahead of 1928 over 30 per cent, taxing present capacities.

"There should also accrue to both companies the benefits of reduced operating and distributing costs as well as bringing about a more flexible operation, enabling us to serve to even better advantage than in the past our several thousand customers throughout the country."

J. V. Santry Heads Combustion Engineering

Wilfred R. Wood and the Irving Trust Company, Receivers of Combustion Engineering Corporation, New York, have announced the appointment of Joseph V. Santry as head of that organization to succeed Col. H. D. Savage, who is assisting the Receivers.

Mr. Santry, who became identified with Combustion Engineering Corporation shortly after its organization in 1914, served successively as director and vice president in charge of sales for five years and as president for four years, resigning about two years ago.

Roots Merges

The P. H. & F. M. Roots Company, original patentees and for seventy years manufacturers of rotary positive blowers, pumps and meters has merged with other interests and is now under the control of the Stacey Engineering Company of Columbus, Ohio.

The new organization includes The P. H. & F. M. Roots Company and The Connersville Blower Company, both of Connersville, Indiana, The Wilbraham-Green Blower Company of Pottstown, Pennsylvania and the Stacey Brothers Gas Construction Company of Cincinnati, Ohio.

Heading the list of officers, Colonel Carmi A. Thompson, of Cleveland, was elected president; Corwin Abbott, vice president and general manager; Fletcher S. Heath of Columbus, Ohio, vice president; and Erle G. Meeks, secretary and treasurer. Charles T. Gordon will continue as general superintendent.

E. D. Johnston, who for the past forty-five years has been connected with The P. H. & F. M. Roots Company, has resigned as president of the company and has retired from active business.

The new board of directors consists of Colonel Thompson, F. S. Heath and C. A. Ward of Columbus, Ohio, W. B. Stacey of Cincinnati, J. T. Wilkin, Corwin Abbott and Charles T. Gordon of Connersville.

All companies involved in the merger will maintain their separate identities and organizations, and will continue to operate separately until the final plans of the merger can be consummated.

At a recent meeting of the board of directors of The Connersville Blower Company, Inc., John T. Wilkin, president and chief engineer, was chosen as general manager, also. At sales in Pittsburgh, was elected secretary; W. E. Newkirk, purchasing agent, became treasurer, and E. C. Hassler, assistant superintendent, was appointed acting superintendent. The last three selections were to fill vacancies due to the deaths of J. E. Huston, secretary-treasurer, and R. T. Huston, vice president and superintendent.

Solving Power Factor Problems with Scale

The General Electric Company announces a new system of solving power factor problems. This is a graphic method involving simple computations only, and is described fully in a new publication, GET-191, entitled "Solving Power Factor Problems by Scale."

Heretofore the calculations relating to power factor and its improvement have been difficult for those most vitally interested, and at best did not visualize the conditions that might result from different treatments. In brief, the new system consists of laying down to scale the known factors and then scaling the unknowns. Many problems are illustrated in the booklet, as well as several solutions for one problem, so that there should be no difficulty in applying the simple rules. Thus the effects and probable costs of improving power factor by unity-power-factor synchronous motors, by capacitors or by synchronous condensers may be scanned and compared. Increased load-carrying capacity is readily measured and rearrangements suggest themselves.

All that is needed for computation is a scale, a pencil and paper. A right-angle triangle with the sides in proportion 3 to 4 to 5 is furnished with the booklet and this, together with a small T-square, save time in the calculations and make the work more accurate.

In the actual calculations, horsepower at unity-power-fatcor is expressed in terms of inches measured horizontally. Lagging power factor is represented by lines slanting upward to the right, and leading power factor, by lines slanting downward to the right. Where it is desired to improve lagging power factor, and to determine the amount of leading power factor necessary to accomplish this result, a triangle is laid out using the horizontal unity power-factor line and the upward lagging power-factor line. Then by applying the 3-4-5-triangle the necessary corrective value may be established. Other problems are solved in a similar manner.

Stanley Electric Tool Company

The Stanley Electric Tool Company, of New Britain, Conn., a subsidiary of The Stanley Works is now manufacturing and selling one of the most complete lines of electrically operated hand tools on the market. This includes drills, screw drivers, bench grinders, aerial grinders, wood saws, stone saws, hammers and sheet metal cutting tools.

The drills, screw drivers, bench grinders and aerial grinders are those developed and manufactured by The Stanley Rule & Level Plant.

The saws were formerly manufactured by the Crowe Safety Saw Company, Inc., of Cincinnati, and comprise a complete

line of electrically and air operated saws for cutting wood and stone.

The hammers were formerly manufactured by the Ajax Hammer Corporation, of New York City. They are used for drilling concrete, brick and stone, chiseling steel, chipping castings, etc.

Unishear is unique in its field as an electrically operated hand tool for outside and inside cutting sheet metal and sheet material of every description. This tool was formerly manufactured by the Unishear Company of New York.

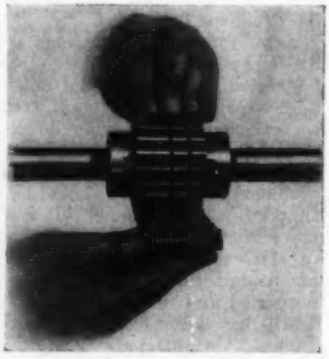
The company will promptly install sales and service stations in New Britain, Conn., New York, Philadelphia, Cincinnati, Detroit, and Chicago.

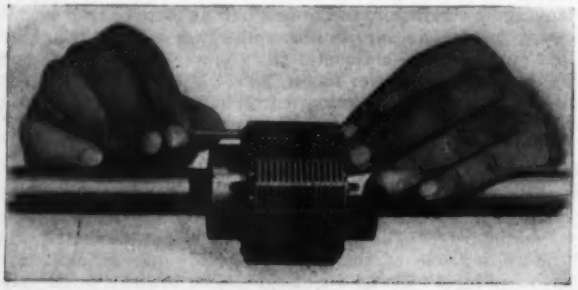
Except for the Pacific Coast and the South, the sale of Stanley Electric Tools which has previously been conducted by The Stanley Rule & Level Plant has been taken over by The Stanley Electric Tool Company with its own selling organization.

Morse Flexible Couplings Meet Industrial Need

Simplicity is the keynote in the design of the Morse Flexible Coupling. Reduced to its basic elements, this coupling is composed of only three principal parts—two sprockets with a section of Morse silent chain wrapped around them. The guide groove in one sprocket holds the chain in place while the other sprocket is free to float under the chain.

Every millwright and factory maintenance man knows the difficulty of placing shafting in perfect alignment. Once placed, many factors, such as worn bearings, the settling of factory buildings, and the like, may affect the performance of the whole job. A Morse flexible coupling between the source of power, and the point of use will often compensate for such faults. and remove a good deal of the grief from the millwright's life. While these couplings are not intended to correct the careless installation, or worn out equipment, they can, and do stop vibration due to shaft misalignment, and all the needless wear and strain that accompanies such conditions. These couplings will run successfully at full rated speed and power with shafts as much as 5 per cent of the pitch off center and as much as 2 degrees out of parallel. For unusual torsional flexibility, a spring sprocket





can be incorporated into the design of the coupling. End play as much as 25 per cent of the pitch is permissible, the normal end play being 10 to 15 per cent of the pitch.

A distinctive feature of the Morse coupling is the ease of uncoupling. By simply removing a pin from the chain —the machines can be uncoupled. This makes an ideal cut-off coupling.

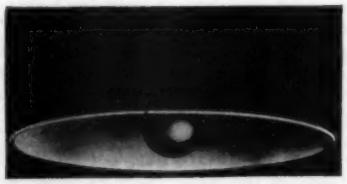
Another point in which these couplings are rendering a great service is on machines where shock loads are prevalent, or where jamming of the whole job due to overloads is to be met with. The coupling, installed on the shaft between the motor and the machine, absorbs most of the shock of sudden starting and stopping under full power by its flexibility. In many cases, such as occur in rotary cutters, and similar machines, a heavy load may cause the machine to jam. It is then a case of what will let go first, with a heavy repair bill to either machine or motor in prospect. In such cases the Morse flexible coupling is equipped with a shearing pin, which snaps when the overload has passed its factor of safety. Thus the motor runs free, the machine stands still, and the only repair necessary is replacement of the shearing pin, a matter of only a few moments work for the millwright. Likewise, all parts of the coupling may be easily and quickly replaced when wear or breakage necessitates it.

In order to enclose this coupling, the Morse Chain Company has developed a spun metal revolving case, and a stationary sheet metal case.

A coupling of this nature is a real necessity in every plant, saving untold thousands of dollars in equipment, and time lost each year. A letter of the makers, care of this publication will bring detailed technical information without obligation of any kind.

The New "Silvray" Controlled Indirect Light

The Silvray Lighting, Inc., 55 West 14 St., New York City, has brought out new industrial lighting units to be known as



"controlled indirect light." The new equipment consists of porcelain enameled steel reflectors of large diameter with special reflecting finish used in conjunction with the Silvray indirect lamp, which is silvered to about maximum diameter. Further particulars and prices will be sent on request.

Operating Fields of Steam Engines and Turbines Are Distinguished

Trend of Thought in Europe Regarding Use of Steam Engine and Steam Turbine in Various Sizes of Industrial Plants

A SWISS manufacturer, Gebrueder Sulzer, state that among the prime movers ordered from them during the past year, steam engines have shown a noticeable revival. Most of the engines recently ordered are of the back pressure type, some serving as primary engines in existing power plants. The admission pressures vary from 140 to 485 lbs. per sq. in., and the back pressures up to 140 lbs.

In former days, nearly every factory had its own steam engine, furnishing the power required to drive the different machines. Later, large electric supply stations were built, and from them energy in the form of electric current was distributed to the various works. Many smaller factories then did without any power station of their own; the existing steam engines were shut down and any power required was obtained from electric motors supplied with current from an outside source.

Nowadays, there are signs of a tendency in the opposite direction. The design of up-to-date power plants is based on the principle of associating the power and heat requirements of the various departments in such a way that, on the one hand, no steam is lost in the cooling water, and on the other hand, the maximum possible mechanical energy is obtained from the steam required for heating purposes. In this manner, the mechanical energy is practically obtained as a

by-product and is consequently, as a rule, considerably cheaper than electric energy furnished by electricity supply companies. The higher the boiler pressure, the more favorable are the conditions for the steam engine; hence the present tendency to adopt higher boiler pressures, and also the increasing demand for steam-driven prime movers. For large power plants of the condensing type only, the steam turbine can come into consideration, but for smaller outputs and comparatively high initial steam pressures or back pressure operations, the steam turbine is less suitable than the reciprocating engine.

Especially in the paper industry, the tendency to prefer reciprocating steam engines to steam turbines is well marked; the severe competition in all branches of paper manufacture, makes the higher efficiency of the reciprocating engine a deciding factor. In paper mills, the circumstance that the exhaust steam is not absolutely free from oil is of no significance, since the steam is used exclusively for indirect heating where traces of oil can do no damage, but may even be beneficial, in that the oil helps to preserve the heating surfaces better. For example, the Gesellschaft fuer Holzstoffbereitung, or Company for Pulp Manufacture, at Basle, has ordered for the paper mills at Albbruck, a Sulzer primary steam engine developing normally about 1100 hp. with steam at an initial pressure of 225 to 255 lbs. per sq. in., and a back pressure of 28 to 140 lbs. The engine will work in conjunction with an up-to-date high-pressure steam boiler and steam storage plant, whereby the thermal efficiency of the mills will be greatly improved. The exhaust steam from the engine will to a large extent be used for working the existing Sulzer low-pressure steam engines which drive the paper machines.

Diversity of Application

The diversity of application of the steam engine may be shown in the following examples drawn from various industrial plants. Another back-pressure steam engine, in twin arrangement, developing 1100 hp. at 180 r.p.m., with steam admitted at a pressure of 160 lbs. per sq. in., back pressure for one cylinder 14 lbs., for the other 40 lbs., was ordered by the Chicama Sugar Factory, Chicama, Peru, to drive a D.C. dynamo mounted on the crankshaft.

A cross compound steam engine was ordered by Michael Nairn & Co., Kirkcaldy, Scotland, for their linoleum works at Choisy-le-Roi, near Paris. The engine works with steam extraction, developing 850 b. hp. (brake horsepower) at 214 r.p.m. with steam admitted at 170 lbs. per sq. in. and receiver pressure of 10 to 14 lbs., up to 4½ tons of steam being extracted per hour. The engine serves to drive a three-phase generator keyed on the crankshaft.

A back-pressure engine for 950 b. hp., 285 lbs. admission pressure and 170 lbs. back pressure, is to be installed by the Buchmann firm at Rinnthal-Sarnstall (Pfalz). Its flywheel is designed for a steel-belt drive.

A uniflow steam engine, serving for direct drive of a rolling mill and consequently having to work under particularly severe conditions, is to be installed by W. Gilbertson & Co., Pontardawe, near Swansea, Wales. The engine develops 1250 b. hp. at 140 r.p.m., steam being admitted at a pressure of 140 lbs. It is fitted with an extra heavy flywheel and a toothed pinion on the crankshaft.

The steam engines recently installed comprise not only engines developing about 1000 b. hp., but also smaller units. For example, the Papeteries de la Robertsau, Strasburg, are having installed in their paper mill at Robertsau two Sulzer back-pressure steam engines at 390 and 210 b. hp. for an admission pressure of 170 lbs. and a back pressure of 14 and 35 lbs. respectively. Both engines are to drive three-phase generators.

Another industrial plant is installing a back-pressure steam engine developing 500 b. hp. at 214 r.p.m., steam admission pressure 170 lbs. and back pressure up to 14 lbs. These engines are to drive a three-phase generator mounted on the crankshaft.

It may be of interest to learn at this time that the Gëorges Fischer Steel and Iron Works, Schaffhausen, Germany, are offering for sale a 60-year-old steam engine still in good running condition. This is Sulzer engine No. 24, installed in 1870, operating at 60 r.p.m. and being offered for sale to make space for a larger power plant.

New Catalogues, Books and Publications

Air Preheater Corp., Wellsville, N. Y.—A late bulletin, No. 130, is descriptive of the Ljungstrom Air Preheater, manufactured by this company. There are charts illustrating the benefits obtained from air preheating, examples of the savings that can be accomplished under typical operating conditions, the functions and advantages of air preheaters explained, various types of equipment for this purpose compared, and the features of construction and special advantages of the Ljungstrom preheater discussed. There are many illustrations, sectional views and diagrams. Copies on request.

Allis-Chalmers Mfg. Co., Milwaukee, Wis.—"Texrope Drives for Every Industry" is a new booklet showing the application of this transmission to various large industries. A number of illustrations show the Texrope in use with the various machines in paper mills. Copy upon request.

American Paper and Pulp Association, 18 E. 41st St., New York City—This association announces a new information service dealing with the industry's problems in waste utilization and stream improvement. The bulletin is called "Waste or Profits" and the first edition has just been received. No definite schedule of publication will be maintained; bulletins will be issued as new and worth-while information is collected. C. M. Baker, the association's engineer, will supervise the preparation of material for publication. The bulletins will be mailed to members of the association and to non-members who contribute to the work.

H. W. Caldwell & Son Co., Chicago, Ill.—Bulletin No. 1086 announces a new standardized drive for elevators which is built to operate centrifugal discharge, perfect discharge or continuous bucket elevators requiring 3 to 15 hp. The construction and installation of the unit is illustrated and there are various charts and dimension tables. The entire line is standardized and carried in stock. Copy on request.

Combustion Engineering Corp., New York City—Reprints of a paper entitled "High Pressure Steam in the Paper Industry" which was read by J. B. Crane of this company before a joint meeting of the News Print Service Bureau and the N. W. Div. Superintendents Ass'n at Marinette, Wis., have been prepared and are available to any one desiring copies. The C-E Multiple Retort Stoker, which is a comparatively new design and the result of considerable research work, is illustrated and described in a new catalogue. This publication has the distinction of being one of the first industrial catalogues to be produced by the Aquatone process. It is an interesting and attractive book and will be sent upon request.

Diamond Alkali Company, Pittsburgh, Pa.—This company, manufacturer of sodium alkalies, liquid chlorine, and by-products, has issued the second edition of its handbook. The company's operations are set forth and chapters are devoted to the description and uses of its various products. Valuable features of the book are analyses, conversion formulae and tables of international atomic weights.

General Electric Co., Schenectady, N. Y.—A new publication just received outlines briefly the numerous forms of C-E synchronous motors and shows industrial applications of many of them. A folder, GEA-1158A displays a chart by which the cost of operating electric appliances and motors may be determined.

University of Michigan, Ann Arbor, Mich.—The 1930 bulletin of courses offered by this university in Chemical Engineering is now available. Courses treating subjects of direct importance to paper technologists are outlined, and copies of the bulletin may be secured by addressing the Chemical Engineering Department of the University.

Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa.—"Engineering Achievements" is a resumé of outstanding developments and unusual and magnanimous installations performed by this company during 1929. The facts are given in a concise manner and the book is well illustrated.

BOOK REVIEWS

Commerce Yearbook, Volume II. The Bureau of Foreign and Domestic Commerce has issued Volume II of its Yearbook. This volume gives valuable information for sixty-five different countries. Among the contents are listed: economic reviews and statistical tables for each individual country, covering—production, transportation, labor conditions, price movements, public finance, currency and exchange, and foreign trade; analyses of world trade—total exports and imports, and trade with the United States; comparative world statistics by countries—area and population, agriculture, manufacturing, transportation and finance. There are maps, charts, tables, etc. Orders should be sent to the Superintendent of Documents, Washington, D. C. Price $1.00.

Compressed Air Society, New York City—The fourth edition of the Trade Standards of this society has just been published. New material comprises a new formula for use in air compressor testing, this being accurate for higher water columns than that previously used, thereby extending the capacity of a nozzle of a given size through a greater useful range; further suggestions in connection with the installation and operation of air compressors; caution against the use of old boilers or tanks as air receivers; suggestion for handling very cold "cooling water" so as to prevent condensation and undue wear on the air cylinders; and another illustration of an air cleaning device. Copies may be obtained from C. H. Rohrbach, secretary, 90 West St., New York City. Price 50c.

The Month at Washington

CONGRESS—Recent bills introduced on Capitol Hill include a bill by Senator Brookhart (S. 2847) to provide for the licensing of corporations engaged in interstate or foreign commerce by the Federal Trade Commission. Section 2 provides that such licensee shall make periodical or special reports to the Commission showing the capital investment, the transaction of such corporation in interstate or foreign commerce, gross and net earnings for each calendar year, salaries of all managing officers, and such other matters as the Commission may deem necessary. Section 3 provides that such licensee shall be entitled to distribute as dividends for any calendar year a total amount not exceeding 5 per cent of the capital investment and shall only pay such reasonable salaries as the Commission shall approve. The net earnings of the corporation for each calendar year in excess of the total amount authorized to be distributed as dividends (referred to as excess profits) shall be paid annually by the corporation to the United States, except where a majority of the directors are of the opinion that it is necessary to retain all or any part of such excess profits for the purpose of expanding the business of the corporation, but in that event the corporation must issue to the United States stock dividends in an amount equal to the amount of the excess profits so retained. Section 4 covers a Guaranty Fund to be established in the Treasury of the United States to provide the issuance of dividends to stockholders. Section 5 covers penalties for violation of the act including fines up to $10,000 or imprisonment for not more than five years, or both.

Here is a bill that needs the closest attention of every reader of this paper. It has been referred to the Senate Committee on Interstate Commerce. Notwithstanding all the noise by Senator Caraway and his gang about lobbying, here is a bill that sure needs a "lobbyist."

Senator Wagner introduced a bill (S. 3033), which was also referred to the same committee, relating to sales and contracts to sell in interstate and foreign commerce. The bill is divided in 72 Sections and is an effort to put on the statute books a Federal Statute of Frauds. Part I covers the form in writing which the contract shall take, capacity to contract, statute of frauds to cover such sales, dealing in existing and future goods, destruction of merchandise, pricing the goods, warranties of title, etc.; Part II covers the passing of title; Part III delivery, etc., and Part IV the enforcement of the law by court action.

Senator Wagner also introduced a bill (S. 3060) to provide for the establishment of a national employment system and for cooperation with the States in the promotion of such a sysem. A Bureau is to be created in the Department of Labor to be known as the U. S. Employment Service.

Congressman Dallinger introduced a bill in the House (H. J. Res. 221) to amend the Constitution of the United States to give Congress the power to establish uniform hours and conditions of labor throughout the United States.

Senator Phipps introduced a bill (S. 3272) to authorize the dispatch from the mailing post office of metered permit matter of the first-class prepaid at least 2 cents but not fully prepaid and to authorize the acceptance of third-class matter without stamps affixed in such quantities as may be prescribed. This bill, if passed, would be of benefit to business generally, simplifying as it does the postage question.

Customs Decisions—The J. H. Scott Paper Co. of New Orleans has obtained a ruling from the U. S. Customs Court on the tariff classification of side runs, cut from standard newsprint paper. This merchandise, upon entry through the customs, was subjected to a duty of 30 per cent ad valorem under par. 1309 of the tariff act of 1922. The court now fixes the duty at ¼ of 1 per cent per pound and 10 per cent ad valorem under par. 1301, as printing paper, not specially provided for (Protest 148495-G-8196).

Federal Trade Rulings—The trade practice conference for wall paper manufacturers was held in New York, February 11th at the Commodore hotel, with Federal Trade Commissioner C. W. Hunt presiding. These manufacturers represent 90 per cent of the production. Subjects discussed included sales on quantity basis, cost accounting, deviation from standards, misbranding, fraud and misrepresentation, defamation of a competitor, imitation of trade-marks or trade names, sales without profit, enticement of employees, espionage and arbitration.

Manufacturers of set-up paper boxes, representing about 80 per cent of the National annual production, have been given permission to hold a trade practice conference with the Federal Trade Commission, but no time or place has yet been set for the meeting. Chairman Edgar A. McCulloch of the Commission is in charge. Close to 370 set-up paper box plants are co-operating. The conference will seek to draw up rules of business practice seeking to provide for elimination of unfair methods of competition.

Commercial Standard Accepted—The Bureau of Standards has announced that approximately 80 per cent of the manufacturing industry by volume of production, has accepted a commercial standard for wall paper, the effect of which it is expected, will increase sales and protect the consumer. The specifications govern the width of raw stock, width of printed pattern, length of single roll, and coverage surface. A color fastness standard is also set up.

When Is a Merger Legal?—The Supreme Court of the United States has just laid down a decision holding that a merger does not violate the Clayton Act where competition is but little reduced thereby. Holding that the acquisition of the stock of one company by another is not in violation of the Clayton Act, where the products of the two companies do not compete in the markets of the country to any great extent and where the possibility of future competition is unlikely, because of the poor financial condition of the company whose stock was purchased, the Court thus overruled the finding of the Federal Trade Commission (No. 42).

Income Tax Rulings—Sums paid to executive officers of a corporation and made up in part of fixed salaries and in part of percentages of net earnings, are deductible from gross income as expenses, being reasonable, the U. S. Court of Claims holds in a recent decision (Wm. S. Gray & Co. vs. U. S., No. E-182). The court holds the payments were necessary for the success of the business and were reasonable.

Election to pay income tax in lump sum may not be changed after settlement date, holds the Internal Revenue Bureau in a recent decision. Many taxpayers attach to their returns a check or money order covering their full tax liability as it appears on their returns, thinking that they have satisfied their income tax liability in full, but if the Bureau should find an additional tax due on audit this precludes the taxpayer from paying that tax in installments. The only recourse he has is to claim undue hardship to be obliged to pay it all at once within 10 days after due notice and demand. It would seem therefore, under this ruling, to be best to pay all income taxes by the installment plan.

Are gasoline taxes deductible? The Income Tax Unit of the Revenue Bureau has recently been handing down a series of decision as to whether the gasoline tax paid in various states is deductible. Many of the states have laws levying a tax upon gasoline sold by distributors and requiring the

distributor to pay the tax to the State. The question was raised by some smart income tax lawyer whether a consumer, who purchases gasoline from a distributor in such a state, may take a deduction for the tax in his federal income tax return, as a result of which the various rulings have been handed down. In general the ruling has been that the tax is imposed upon the consumer where the legislature of the state has evidenced the purpose of so imposing the burden of the tax by expressly stating such intention in the law, by provision for a refund of the tax to the purchaser who uses the gasoline for purposes other than propelling motor vehicles on the public highways. In the following it has been held that the law of the state imposes the tax upon the consumer and that therefore the tax is deductible in the federal income tax return of the consumer who pays it and to whom it has not been refunded by the state, but that if the tax is made a part of the business expense of such consumer, it cannot be deducted separately as a tax: Michigan, Virginia, North Carolina, Kentucky, New York, Delaware, Missouri, South Dakota, Wisconsin, Illinois, New Hampshire, Pennsylvania, Washington, Georgia, Rhode Island, and Maryland.

U. S. Forest Survey—One of the biggest enterprises ever undertaken in this country to develop forestry is the government project for launching a forest survey of the entire country. Authorized by the McSweeney-McNary Act of 1928, it will be a comprehensive appraisal of existing forest supplies and conditions, growth and requirements, present and future trends, etc. The wood requirements of wood-using industries and of the pulp consumers will be measured.

Conservation Week—Senator Wagner of New York has asked that the President designate the third week in March of each year as "American Conservation Week" (S. Con. Res. 23), to fix in the public mind the settled policy of the nation to conserve its natural resources.

Wholesale Prices—A minor decrease in the general level of wholesale prices is noted for January, or only one-fifth of 1 per cent. With 1926 as the basis of 100, we find the following changes for paper and pulp:

Year 1929	Jan. 1929	Dec. 1929	Jan. 1930	Purchasing power of the dollar Dec., 1929
87.9	88.6	87.9	87.3	114.5

Employment and Pay Rolls—Employment decreased 2.0 per cent in December as compared with November, while pay roll totals decreased 0.8 per cent. With 1926 as the basis of 100, we find the following changes:

	Employment 1928	1929		Pay Roll Totals 1928	1929	
	Dec.	Nov.	Dec.	Dec.	Nov.	Dec.
Paper and pulp	94.1	96.0	95.5	97.0	98.8	98.6
Paper boxes	97.7	104.0	109.9	105.8	112.2	106.4
Paper and Printing	101.2	103.7	103.8	105.1	108.5	109.4

Rayon Unsuited for Papermaking—Rayon, unlike cotton or wood fibers, from which it is made, is not suitable for a papermaking material, it is revealed by laboratory tests conducted recently at the Bureau of Standards. The tests show it is not only valueless in papermaking stock but may actually be detrimental to the quality of the paper. Owing to loss of strength when wet, the rayon filaments tended to break into short lengths during the pulping operations without the fibrillation and fraying necessary for good felting in the formation of the sheet. As a consequence the sheets from rayon lacked the strength to withstand the handling required in the subsequent pressing and drying operations and the pliability character of rag papers.

Business Swings Toward Normal—Assured that the trend of business has swung definitely toward normal activity, the executive committee of the national business survey conference called on President Hoover to tell him of the commercial status of the nation and assured him that no unusual steps need be considered for further stimulation of industry.

Employing Men Between 45 and 54—Men in the age group of 45 to 54 years were placed more easily in positions by public employment bureaus last year than in any other group, thus disproving the popular belief that there is discrimination against men more than 45 years old. There was a decided falling off however in the percentages of men placed who are more than 55 years old. For women it is shown that a much larger percentage of women 35 years old or more were placed than of those younger than 35. No discrimination is shown against married women.

Credit Trends—The Department of Commerce has been asked to secure data from which credit and general business trends may be determined. It is claimed that the gathering of reports from a large number of retailers on their sales each month, the percentage done on a credit basis, the extent of installment sales, credit losses, the promptness with which accounts are being paid, and related facts, would be of great value to business generally, from the manufacturer on down through the wholesaler to the retailer himself.

Aid the Distribution Census—The Census Bureau is asking all manufacturers and wholesalers to give their whole-hearted support to the census-takers who are coming around to take the figures and urging that they quickly fill in and return the blanks provided for the Census of Manufacturers, 1929. It is claimed that frequently the delay in providing valuable figures is due to the neglect of the manufacturers themselves who delay unduly the filling in of the reports required to compile the necessary statistics. The coming census will be the most comprehensive statistical compilation ever undertaken in this or any other country. Business interests everywhere will receive valuable data and are urged to give their whole-hearted earnest and sincere co-operation.

Interstate Commerce Rulings—In Miami Valley Coated Paper Co. vs. Cincinnati Northern R. R., (No. 22017), the Interstate Commerce Commission has just ruled that rates charged on eight carloads of iron paper-winding cores, returned, from Franklin, O., to Elkhart, Ind., were unreasonable, and a reasonable rate was prescribed for the future and reparation awarded.

Proposed readjustment of rates on woodpulp, in carloads, from and to points in New England on the Maine Central, Boston and Maine, and Grand Trunk, and from points in Maine on the Maine Central to points in New York State, were found not justified and the suspended schedules were ordered cancelled, in a decision published as I. & S. Docket No. 3256.

Carload rates on crinkled paper-bag linings from San Francisco to Nogales, Ariz., applicable on a shipment destined to Puga, Nayarit, Mexico, were found unreasonable and reparation was awarded (No. 19754).

In E-Z Opener Bag Co. vs. Illinois Central, No. 20346, rates on pulpwood from certain points in Mississippi to Braithwaite, La., were found unreasonable, and a reasonable rate was prescribed for the future, with reparation awarded.

Rates on newsprint paper, in carloads, from International Falls, Minn., and points in the Minnesota group to Aberdeen, S. D., were found not unreasonable or unduly prejudicial, and the complaint was dismissed (No. 20414).

Rates on newsprint paper, in carloads, from certain points in Minnesota and Canada, for that portion of the transportation within the United States to Valley City, Jamestown, Bismarck, N. D., and points directly intermediate thereto, were found unreasonable in another decision (No. 21066), and reasonable rates were prescribed, with the award of reparation.

Recent Publications—"Paper and Paperboard: Production and Papermaking Equipment in Use—Pulpwood Consumption and Wood-Pulp Production" is the title of a pamphlet just issued by the Census Bureau.

"Industrial, Agricultural, and General Employment Prospects for 1930" is the title of a bulletin issued by the Department of Labor, giving the outlook by states alphabetically.

"Statistical Abstract of the U. S., 1929" is the title of a valuable book just issued by the Department of Commerce, which makes statistical research easy, giving the latest available figures on practically every phase of our economic and industrial life, covering manufacturing industries, capital employed, wage earners, wages, cost of materials, power, quantity and value of products, prices, consumption, commerce, population, etc. The forest area, reservations, lumber and pulp production, are discussed under Forests and Fisheries.

MICHIGAN

Sutherland Mill Earnings Decline

Net income of the Sutherland Paper Company for the year ended December 31, 1929, after all charges including depreciation and federal taxes, was $388,428. This was equal to $1.29 a share for the 300,000 shares of common outstanding as compared with $478,944 or $1.59 a share, for 1928. The comparative figures include earnings of the Standard Paper Company, which was acquired in August, 1928.

Current assets of December 31 totaled $1,412,705 against quick payables of $299,557 or a ratio of about 4.71 to 1. Total assets are placed at $3,854,184. Capital stock and surplus is fixed at $3,554,627.

Directors of the Sutherland Paper Company at a meeting held voted to go on a quarterly dividend basis of 22½ cents a share, as against 30 cents quarterly the last year. President L. W. Sutherland stated this reduction is a temporary precautionary measure and likely to be discontinued in a few months. He declared that 1929 was one of the most highly competitive periods in the history of the business. Sales exceeded 1928 by over 12 per cent.

The regular meeting of the Cost and Technical Association of the Paper Industry will be held January 29, at the Columbia hotel, Kalamazoo. Two speakers are on the program. Harry A. Harvey, of the Sutherland Paper Company, will speak on "Auto Board," and Arthur Fitzgerald, of the Kalamazoo Vegetable Parchment Company, will present the topic, "Planning Purchases for a Paper Mill."

Clarence Sisson, general manager of the Western Board and Paper Company, Kalamazoo, has been placed on the board of directors of that concern, filling a vacancy caused by the retirement of C. H. Kleinstuck. The other directors are: S. B. Monroe, C. H. Dickinson, Charles G. Bard, C. E. Nelson, and Michael Redmond. Officers have been re-elected for the ensuing year as follows: President, Charles G. Bard; vice president, S. B. Monroe; treasurer, Michael Redmond; secretary, James P. Bachelder.

The only change announced as result of the annual election of the Kalamazoo Paper Company is the naming of William K. Wallace a director to succeed the late W. S. Dewing. The other directors include the following: F. M. Hodge, president; D. F. Altland, Detroit, vice president; A. E. Curtenius, secretary-treasurer; C. S. Campbell, A. B. Connable, D. R. Curtenius and C. H. Kleinstuck.

Kenneth Huddleston, a former employee of the Kalamazoo Paper Company, Kalamazoo, has brought suit for $9,000 damages against the company claiming that an injury which he received while in the employ of the company has become permanent. A settlement formerly made has been set aside pending the outcome of the case.

Superintendents Hear J. P. Strasser

The January meeting of the Michigan division of the American Pulp and Paper Mill Superintendents Association held its regular monthly meeting, Thursday evening, January 16th, at the Columbia hotel, Kalamazoo. Dinner was served at 6:45 p. m.

The speaker of the evening was Mr. J. P. Strasser, of the Stein-Hall Manufacturing Company, of Chicago. Mr. Strasser's subject was "Starch in Paper Making" and his paper is published in full elsewhere in this issue.

Plans have been arranged for the merger of the Grand Rapids Paper Company and the Union Paper and Twine Company of Michigan, Inc., with headquarters in Detroit. This merger covers operations in the Grand Rapids territory and the new company will operate under the former name but as a division of the Union Paper Corporation. The Union warehouse will be discontinued and operations confined to the offices of the Grand Rapids Paper Company. W. A. Steward, heretofore manager of the Union Paper and Twine Company, will continue as head of the consolidated organization.

Complete Year of Improvements at King Plant

A reconstruction and development campaign that has extended over the last 12 months and directly concerns the King division of the Allied Paper Mills is now drawing to a close. Many of the innovations have been tested out and have demonstrated their worth.

One of the most marked improvements has been the installation of a tumbler washing system, which handles the raw stock from the time it leaves the cooking tubs until it passes into the beaters. With this tumbler washing system, worked out by W. A. Anderson, vice president and production manager, the time of washing and bleaching stock has been reduced from four and a half hours to three and a half minutes, effecting a great saving in time, power, and labor. It is a simple device, yet is thought to be the only one of its kind in use in any paper mill today. The process employed in handling stock is protected.

In connection with the installation of this system, it was possible to do away entirely with 16 old washers and the concentration of the two washing and beating departments into one. All the old washers have been rebuilt into beaters the King division having adopted the 2,000-pound beater as the standard.

By the conversion of space, formerly used for stock and storage purposes, it has been possible to greatly enlarge the coating and finishing room department and the King coating division is now running 24 hours daily, as against nine hours a day in the past, turning out 90,000 pounds of coated paper a day, where formerly 40,000 pounds was the limit. A very fine sorting room for coated papers has been added, as well as new concrete and iron floors, and better loading facilities. The No. 1 machine, a 126-inch fourdrinier, is being enlarged by the addition of six driers and a sizing tub.

An improvement at the Monarch division has been the elimination of one sorting department. Manager Anderson reports that the company's 10 paper machines in Kalamazoo and Otsego are now running at capacity. All improvements made during the past year have been effected without a shutdown.

At the annual meeting of the company January 22, all directors were re-elected.

R. J. Forsythe, president of the Hyatt Roller Bearing Company, Newark, N. J., announces the appointment of H. K. Porter as general sales manager. Mr. Porter succeeds H. O. K. Meister, who was recently promoted to assistant general manager of the Hyatt Company.

Frederick Alan Schaff has been elected president of The Superheater Co., New York City, George L. Bourne, retiring president, having been elected chairman of the board of directors. Mr. Schaff's headquarters will remain at the principal office of the company, located at 17 East 42nd Street, New York.

Announcement is received of the sudden death, on January 17, of Clarence W. Hodges, general purchasing agent of the Worthington Pump and Machinery Corp., New York City. Mr. Hodges has been employed by the company in the same capacity for the past eleven years.

In accordance with the simplification program being carried out by the Department of Commerce, Link-Belt Company, Chicago, has inaugurated a plan for carrying its complete line of roller chain drives in stock at various distribution points throughout the country.

ADVERTISING PAGES REMOVED

❖ NEW ENGLAND ❖

Paper Merchants Meet

The New England Paper Merchants Association re-elected Arthur E. Ham, president; Floyd Blackman, first vice president; William H. Rourke, second vice president; Edward Bement, secretary, and John Kuster, treasurer, at its annual meeting held at the Harvard Club of Boston on January 16th. Chatfield Paper Corporation, of New Haven, and L. B. Philbrick of Salem, were elected to membership. H. B. North, of the New Haven Paper Merchants Association, was present and spoke briefly. Charles H. Barr, advertising counselor of Holyoke, spoke of a new series of business stimulators which he is preparing for printers.

The most important work which the association has accomplished is the straightening out of numerous difficulties between members which might have led to misunderstandings and trouble. It is proposed to hold meetings monthly for this purpose.

Besides the officers, the executive committee includes: Edwin Porter, of Cook Vivian Co., and W. N. Stetson, Jr., of Storrs & Bement Co., for white papers, and W. H. Loud, of Stimpson & Co., and W. A. Arnold, of the Providence Paper Co., for wrapping papers.

The New England Freight Association has passed the Boston & Maine R. R. proposal for stop off in transit privileges to be accorded cars loaded at two New England paper mills, the through carload rate from first loading point to destination plus a $10 per car charge for the 48-hour time allowance for stop off to complete loading. It now goes before the Central Freight Association at Chicago. The proposal was instigated by paper interests who desire to reach Chicago and other middle western markets on the carload freight by making the minimum requirement for a carload out of loadings at two or more mills. Of course, the second loading must be on a normal routing over the Boston & Maine R. R. lines. It would be of great benefit to Holyoke and Fitchburg.

Shipment of Canadian groundwood to the Great Northern Paper Co., is important paper news from northern New England. Great Northern has always been considered completely independent of outside sources of wood pulp of all kinds. Rogers & Webb, steamship agents of Boston, have placed an agent at Searsport to supervise the traffic which came in during January. There were three cargoes from Sheet Harbor, N. S., where the A.P.W. Pulp & Power Co. has a groundwood mill, and two cargoes from a Baltic seaport. It was the largest month's traffic ever received at the little Maine port, which is the tidewater terminus of the Bangor & Aroostook Railroad. Incidentally, it was understood C. H. Sprague & Son of Boston are to construct and operate a coal discharging plant at Searsport, which will be of considerable service to northern New England mills.

Record wood pulp imports at Portland, Me., are reported for January with 36,000 tons primarily from Sweden, Norway and Finland with some from Germany. There are approximately seven vessels at present on the high seas en route to Portland with cargoes of chemical pulp. Some 14,000 tons of china clay were also imported at the Maine port from Fowey during January. Portland is becoming an increasingly important import center for wood pulp, because importers find mixed cargoes of pulp for Maine and western mills can be advantageously handled there and reach the west over the Canadian National railways at differential under standard American railroads.

Hoague Sprague Corporation, of Lynn, Mass., manufacturer of about 20 per cent of the paper shoe boxes of the entire country, have undertaken an ambitious scheme of expansion. Backed by the United Shoe Machinery Corp., who control 51 per cent of the box company's stock, Hoague Sprague Corp., will shortly open branch factories in Manchester, N. H., and Auburn, Me., to make boxes, installing the company's patented automatic box machinery. It was also announced that they have acquired the Fellows Box Co., of Lynn and Kingston, N. H., and the A. G. Walton Co., shoe manufacturer of Chelsea and Lawrence, who operates a box factory at its Chelsea plant. The Hoague Sprague Corp., main plant is equipped to manufacture 200,000 shoe cartons daily and made 10 million more in 1929 than 1928, starting 1930 with a new high record production for January.

A refund of $35,576 was made last month to the Orono Pulp & Paper Co., shortly to become a part of the Eastern Manufacturing Co., Bangor. The refund was for overassessment of income and profit taxes and interest for 1917-18-19. It was recently announced by the Internal Revenue Bureau following decision of the District Court of Maine.

Buck, Cushman and Skillings, of Norway, Me., have chartered a business under Maine laws to buy, sell and manufacture wood pulp and timberlands. The president is L. H. Cushman; treasurer, Clarence W. Buck.

Story Parchment Loses in Appeal of Case

Judge Wilson, in the Circuit Court of Appeals for the First Circuit, has written a decision in the case of the Story Parchment Co., Trenton, Mich. vs. Paterson Parchment Paper Co., Paterson, N. J. and Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich., by reversing the decision of the District Court.

The plaintiff was awarded $65,000 damages in the District Court for alleged conspiracy to restrain trade. The West Carrollton Parchment Co., West Carrollton, Ohio, was mentioned also as a conspirator in the case, but was not included as a defendant because of lack of jurisdiction.

The Circuit Court held that actual loss as a result of conspiracy was not proved; that regardless of conspiracy or an association to maintain price, the companies would have taken action to retain business if acting entirely independently of each other—the natural action would have been to cut prices to hold trade. An important principle in this case was: whereas the Government needs only to prove conspiracy in restrain of trade to win an anti-trust suit, a private corporation or individual must prove in addition to the conspiracy, actual loss as a result.

Investment houses in New England are strongly recommending the securities of two New England paper companies at current prices, one of which has long been regarded as gilt edged, that is, the Brown Company. Harris Forbes & Co., Boston, point out the immense value of the Brown Co. timberland holdings which in area are equal to three-fourths the State of Massachusetts, or 5,800 square miles. These timberlands are only valued at $15,000,000 on the Company's books but are said to have marketable values of $30,000,000. Their power sites have a potential generating capacity of 150,000 horsepower.

Speaking of the Eastern Manufacturing Co., and its rapid comeback to prominence in the industry, and as a reasonable investment for the business man, it is pointed out that the common stock is selling at six and one-eighth times its earning power and stocks are still considered a good speculative investment when selling at ten times their earnings. The company has spent a million dollars in two and a half years in improvements and it is expected that there will be big ledger results in the sales of 1930.

It is expected that the Keyes Fibre Co., Inc., of Waterville, Me., will build a large addition to its plant in that city. This company manufactures moulded pulp pie plates.

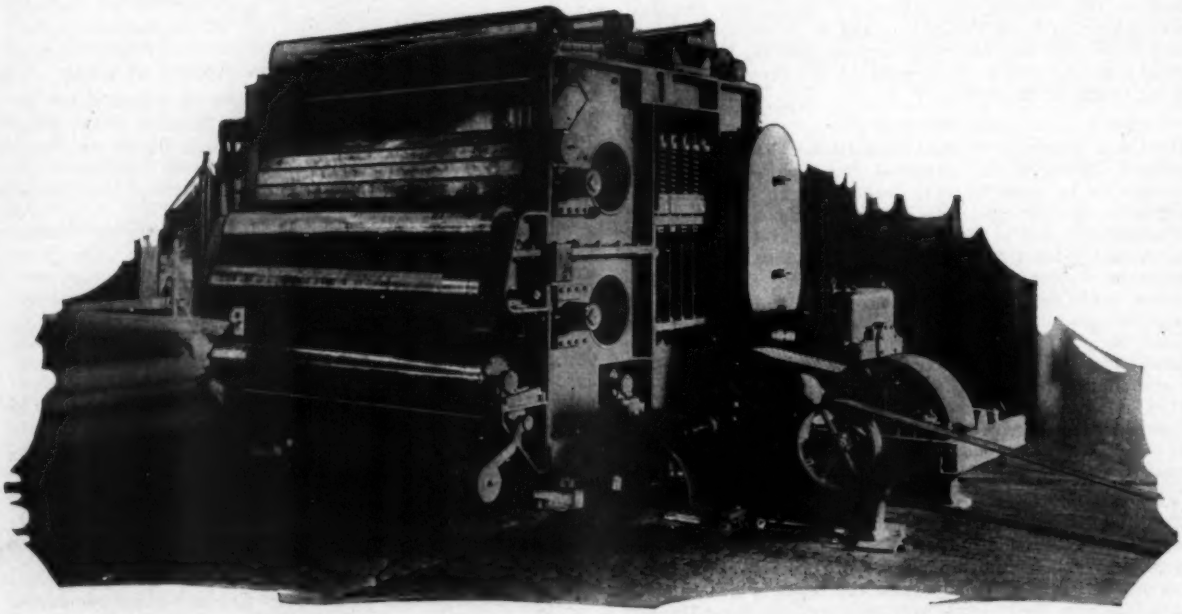
To care for the rapidly growing import pulp business at Portland, the Maine Central Railroad who is rebuilding its Portland Terminal Co., property which was destroyed

312 HYATTS Protecting this Fibre Board Machine

Modern paper mill machinery demands bearings of simple construction, yet capable of uninterrupted service, with a minimum of attention. Hyatt Roller Bearings suit these requirements perfectly.

The fact that so many paper and pulp machinery manufacturers are now employing Hyatts as standard equipment is good and sufficient proof that the Hyatt bearing is particularly suited for this application.

Hyattized machines of every sort . . . and the Hyattized motors and shafting which drive them . . . give assurance of longer hours with fewer shutdowns . . . and longer life with less maintenance.



Hyatt-protected fibre board machine . . . designed by Mantius Engineering Company, New York . . . built by Kutztown Foundry & Machine Company, Kutztown, Pa. . . . in service at Wood Fibre Board Products Corporation, Brunswick, Maine.

Hyatt Roller Bearings require only infrequent lubrication, and because of their sturdy construction they have the capacity to take unrelenting punishment while protecting the equipment from shock and friction.

Naturally, then, Hyatts are the logical choice for all modern paper and pulp machinery. Our engineers are ready to serve you with the development of suitable designs.

HYATT ROLLER BEARING COMPANY

Newark Detroit Chicago Pittsburgh Oakland

HYATT

ROLLER BEARINGS

PRODUCT OF GENERAL MOTORS

by fire last September is making provisions for a modern efficient pulp handling pier with equipment specially suited for handling this raw material. A new steel storage shed 792 feet in length, 125 feet wide is designed for pulp storage and handling, adjacent to a new 900 foot wharf. The company is also building a coal handling plant with coal storage facilities and large diggers.

The United States Envelope Co. received some substantial refunds from the Federal Government last month in the form of an abatement of $159,621, a credit of $2,414, and a cash refund of $13,756. This goes back to overassessments in 1909-11-12-18-19. Allowances were made for additional depreciation deductions, losses sustained on the sale of capital assets and ordinary and necessary business expenses. The decision for the Envelope company was rendered by the U. S. Board of Tax Appeals.

The January issue of "The Stuff Boston," organ of the Bird Machine Co., of South Walpole, Mass., is an unusually worthwhile piece of publicity. A line drawing of a papermaking machine and its supplementary equipment shows eight units of Bird Machinery functioning to make better paper and reduced costs. The display shows the following Bird products: pulp screen, thickener, save-all, centrifiner, screen, self-cleaning shower pipe, Vickery felt conditioner and the Vickery doctor.

William Jenks has joined that exclusive group of Boston paper men who have given 50 consecutive years of service to the paper industry in one form or another. His concern, Stimpson & Co., wrapping paper and fine paper merchants, 190 High street, celebrated the occasion. Mr. Jenks was general manager from 1892 to 1927 when the company was reorganized and he was elected president.

C. F. Hatch Co., manufacturer of folding paper boxes of Lowell, Mass., is reported to have received an unusually large contract which will probably mean expansion.

Sales Record Ledger made by Millers Falls Paper Co., is being manufactured now in an improved quality still selling at its old price. The company sought to build into the sheet special ruling, writing and erasing qualities while maintaining the clearness of color for which it is known. The company has prepared a booklet showing all substances of the sheet in white, buff and blue.

S. L. Wilson, president of the American Writing Paper Co., and president of American Paper and Pulp Assn., represents the paper industry of New England in the National Business Survey Conference, which has developed from President Hoover's business conferences at Washington.

Pat Dowd, manager of the Holyoke Traffic Bureau, and C. L. Whittemore, traffic manager of the New England Paper & Pulp Traffic Association, respectively, chairman and vice chairman of the Paper & Pulp Committee, New England Shippers Advisory Board, are about the only optimists, on that board judging by first quarter carload predictions. While other industries predict declines compared to first quarter 1929 of from 5 per cent to 35 per cent, the paper men report increases of 5 per cent in groundwood, rope, jute and manila papers, approximately the same production of fine paper as last year, increases or unchanged conditions in converted items such as tablets, pads, papeteries, napkins; unchanged conditions in paperboard, while the import carloadings of wood pulp are expected to be 15 per cent greater. M. J. Hawkins reporting for the roofing industry predicts a decline of 35 per cent as compared to last year however.

Reporting for last year, the Bangor & Aroostook R. R. states that its carloadings of pulpwood increased from 324 to 1,040 monthly for the last quarter. Their paper loadings increased from 3,480 to 3,839. Percy R. Todd, president of the road accounts in part for this by the steady expansion of the Great Northern and Fraser Paper Companies. The Great Northern is steadily increasing its output by the substitution of larger machines for those formerly employed. The Fraser mills are bringing their third mill into full operation this month.

The German steamer, Ilona Seimers, from Hamburg, with a cargo of wood pulp from New England mills arrived in port last month after running out of coal at sea and being forced to burn part of her cargo to reach port.

George McCarthy, Boston representative and contact man with merchants for the American Writing Paper Co., has been taken seriously ill and is granted an extended leave of absence. E. H. Sussenguth has been appointed in his place for the present. The office is at 80 Federal street.

Another New England field representative, Howard Casey, of the Hampshire Paper Co., has been taken ill and is absent pending his recovery.

Roger Taft, eastern sales representative for Hammermill Paper Co., and Gilbert Bothwell, eastern cover representative for the company, discussed sales quotas and the new cover lines of Hammermill with Storrs & Bement Co., salesmen and executives January 24th. The S. D. Warren Co., movie illustrating the complete process of papermaking was shown at a sales meeting for the younger members of the S. & B. staff January 31st.

M. T. Hill has been appointed superintendent of the coating department of the Marvellum Co., of Holyoke, specialty papermakers.

Since January 1, the Collins Manufacturing Co. mills at Wilbraham, Mass., have occupied new offices in the Hadley Falls Building opposite the Hotel Nonotuck in Holyoke.

Tileston & Hollingsworth Co., had its 1930 calendar, the work of thirteen printers, analyzed before the largest gathering that ever attended a meeting of the Boston Club of Printing House Craftsmen. On the following evening, the Concord, N. H., craftsmen heard Harry L. Gage, the speaker and critic on the same subject. Providence, Portland and New Haven printers will hear the same subject discussed during February. T. & H. enjoyed a year of record sales in 1930.

Groveton Paper Co., Groveton, N. H., announces two new lines. They are Groveton Index Bristol in four weights and Groveton Folding Bristol, the latter designed to attain characteristics of rope bristol for filing systems, postcards, tags and mailing folders. It is made in colors. Groveton now maintains a Boston sales representative, K. L. Moses, 80 Federal street.

First sailings on the Boston-Gulf port steamship service to Tampa, Mobile and New Orleans were made in January. New England mills are much interested in this service and if it is reasonably efficient will patronize it. A tonnage of paper coming to New England from Braithwaite and other Gulf state points, principally southern kraft has been assured. Boston merchants are keenly interested in this end of it. Rates to Gulf ports range around 34¢ for paper originating in the Boston rate district, and a 30¢ proportional rate for paper from inland New England points.

Russell L. Madden, general sales manager of the American Writing Paper Co., Holyoke, Mass., is now vice president in charge of sales; Rufus D. W. Ewing is general sales manager and Roland B. McCougall is assistant general sales manager. The American Writing Paper Co., has also sold its George C. Gill division 156 inch fourdrinier. But this Holyoke mill is now planned to be a fine paper producing unit taking over some of the business from Windsor Locks machines, further concentrating production in Holyoke.

THE PERFECT APPLICATION OF A PRINCIPLE

Lubricant Screw. This is removed to insert lubricant...then turned down to force "Merco" lubricant around and under the plug...producing a seal against leaks and eliminating sticking.
To Turn Screw. Any convenient bar or stick is inserted in hole to turn down or take out lubricant screw. Special wrenches are furnished by us if desired.
90 Degree Visible Stop. Indicates clearly to operator whether valve is in open or closed position.
Lubricant Duct. The lubricant reaches the base of the plug through these ducts. As the plug is turned, a film of lubricant completely seals the valve against leaks.
NORDSTROM VALVES
Lubricant Channel. The "Merco" Lubricant is forced by hydraulic pressure through these channels to base of plug.
Lubricant Chamber. The "Merco" Lubricant fills this sealed chamber and exerts an upward pressure on the base of the tapered plug which prevents sticking. This is why Nordstrom Valves are always easy to turn.

THE "Merco" Compound

A metallic lead seal that makes joints permanently leak-proof. Use it on screw thread or gasketed joints, boiler repairs, manhole plates, etc. Easily applied with a brush. May we send a free demonstration can?

LUBRICANT SEALS THE VALVE UNDER PRESSURE

Lubricant under hydraulic pressure up to 2000 pounds per square inch seals the Nordstrom Valve against leaks and prevents sticking should the plug ever become tight. There is a special "Merco" Lubricant for every valve service. We will be glad to recommend the one needed for your requirements. Ask for latest Catalog.

MERCO

MERCO NORDSTROM VALVE COMPANY
SUBSIDIARY OF THE MERRILL COMPANY
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Atlanta: Healey Building
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New York: 11 W. 42nd Street
Pittsburgh: Clark Building
San Francisco: 343 Sansome St.

AGENCIES IN PRINCIPAL CITIES

Factories: Oakland, California and Belleville, New Jersey. *Canadian Manufacturers:* Peacock Bros., Ltd., Montreal, Cobalt, Winnipeg, Vancouver. *England:* Audley Engineering Co., Ltd., Newport, Shropshire. *Buenos Aires, Argentine:* General Electric, Soc. Anon., Victoria 618 Esq. Pern.

◆ NORTHERN NEW YORK ◆

Ontario Specialties Co. Buys Wise Plant

The Ontario Specialties, Inc., of Watertown, manufacturers of pads, notebooks, tablets and school supplies, has purchased from J. B. Wise, Inc., its plant in Watertown. Following consummation of the transaction, Sherman H. Stewart, manager of the Specialties Co., announced that the business would be transferred to the new quarters as soon as possible.

The plant is a two story structure with about 50,000 feet of floor space. The Specialties Co. will employ a larger force of workmen when the new plant is in operation. The concern uses from 40 to 50 employees in the winter and 60 in the summer. The maximum when operating at capacity in the new quarters will be around 80.

Mr. Stewart announced that hundreds of orders are unfilled and that more would be obtained. The concern has sales offices at 30 East 42nd street, New York city. R. J. Parham, New York, is president and Carl B. Martin is secretary and treasurer.

G. Seymour Knowlton, treasurer of Knowlton Brothers, Inc., paper manufacturers, has been elected president of the Beebee Island Corp. of Watertown. At the recent annual meeting, a committee of four to investigate means and methods of development of the corporation's Mill street water power in Watertown was appointed.

The International Paper Co. recently declared a regular quarterly dividend of 60 cents on common stock, payable Feb. 15 to stock of record Feb. 1.

Northern New York paper mills were hampered by high water the latter part of January. Rivers reached flood stage and many plants were forced to shut down. Several industrial plants at Warrensburg, including the Schroon River Pulp and Paper Co., were damaged. Lumbering operations of the Gould Paper Co. at North Lake were delayed by the thaw and resultant high water. Tractors were unable to operate because of the condition of the woods roads.

The International Paper Co. has announced through the office of Owen Shepherd, vice president and treasurer, that a gift of 500 acres of Adirondack timber land has been made to Syracuse University for the use of the New York State College of Forestry. This tract will adjoin the New York State Ranger School near Wanakena on Cranberry Lake. The ranger school forest at present comprises 1,850 acres. Enlargement of the forest by the gift of the 500 acres makes possible the establishment of a comprehensive plan of forest management over this area. The forest is being developed by the faculty and students of the Ranger School which is a branch of the State Forest College at Syracuse.

John J. Warren has been re-elected president of the Harmon Paper Co. of Brownville. Arthur E. Warren has been elected assistant treasurer and R. E. Skinner secretary. The board of directors is comprised of John J. Warren, R. E. Skinner, D. F. Warren, A. E. Warren and F. M. Boyer.

Erwin Bellinger, agent at the DeGrasse mill of the International Paper Co. at Pyrites, has resigned to accept a position with the executive staff of the Newton Falls Paper Co. at Newton Falls. Mr. Bellinger had been connected with the paper mill office staff at Pyrites for 15 years. He began as a stenographer and finally became assistant treasurer of the organization when the mill was operated by the New York World. After the mill was taken over by the International Paper Co. he became mill agent.

Need of a new wood supply for New York State and its vital importance to the newspaper publishing industry, were described by Nelson C. Brown, acting dean of the New York State College of Forestry, Syracuse University, before 100 newspaper executives at a meeting in Syracuse, January 22. He said he hoped the State would see fit to allow cutting and reforestation on a part of the 2,000,000 acres of state-owned land in the Adirondacks and Catskills. Sensible reforestation, he said, will solve an acute problem and put New York State's lumber and paper supply back in the state, at a saving of many million dollars a year on freight and shipping charges alone.

Warren Parchment in Bankruptcy

The Warren Parchment Co., Inc., of Dexter has filed a voluntary petition in bankruptcy with the clerk of the United States District Court at Utica. The company has unsecured liabilities of $167,959.76, secured liabilities of $57,000 and taxes of $35,445.53, the latter item of which must be paid in full. Its property includes plant and water power at Dexter valued at $276,990.56 and personal property of about $70,000.

The corporation was organized on Oct. 2, 1911, when it was incorporated under the laws of the state of New York with a capital of $35,000. At present the capital is $50,000. The mill was devoted to the manufacture of grease-proof and specialty papers, producing about 15 tons every 24 hours.

The latter part of October a meeting of creditors was held and James E. Campbell of the Dexter Sulphite, Pulp & Paper Co., Robert J. Buck of the Northern New York Trust Co. and Henry J. McCormick of the Northern New York Utilities, Inc., were appointed a committee to investigate conditions and determine the most satisfactory disposition of the assets. For sometime negotiations for the sale of the property were considered. The schedules filed with the bankruptcy petition show a claim of the United States for federal income tax from 1917 to 1922 now on appeal to the board of tax appeals, of $34,066.98, which must be paid in full.

The receivers of the Keystone Hardwood and Chemical Co., with plants at Glenfield, have decided not to continue the business. The real estate will be sold at a foreclosure sale to satisfy a trust mortgage of $70,000 which is held by the Exchange National Bank of Olean and Calvin Fentress of Cook county, Ill., the trustees. The plant at Glenfield is said to be the largest wood distillation plant in the country.

Allen MacDonald, 40, of Norfolk, was fatally injured on January 17 when he fell into a crusher used for breaking frozen coal at the Norfolk plant of the St. Regis Paper Co. He is survived by his widow.

Charles E. Eaton, well-known civil engineer and paper mill designer, is ill at his home in Clayton. Mr. Eaton, who has a wide acquaintance in engineering and paper mill circles, was stricken with a heart ailment the day after Thanksgiving.

The production of newsprint at the plant of the Algonquin Paper Co. of Ogdensburg during the past year amounted to 30,000 tons. The daily output was 100 tons and the plant was operated approximately 300 days. In 1928, the production was substantially the same as last year.

The annual meeting of the stockholders of the International Pulp Co. of Gouverneur was held on January 22. The following directors were elected: Michael Doyle, Rochester; Kendall B. Castle, Rochester; M. M. Belding, S. J. McCrimlisk, William H. Stillhamer, New York; W. D. Mahoney, Averill Park, N. Y.; Frederick N. Belding, Rockville, Conn., and William C. Geer and Frank P. McCarthy, Troy, N. Y.

The officers of the company are: President, Michael Doyle; vice president, William C. Geer; treasurer, M. M. Belding; secretary, S. J. McCrimlisk; J. J. Wallace of Gouverneur, superintendent.

Clarence H. Bowman, manager of the Syracuse agency of the River Basin Paper Co. of Monroe, Mich., died at his home in Syracuse on January 22.

Installation of 8 No. 2 Timken-equipped "Miami" Jordans built by Shartle Brothers Machine Co. at the mill of the Gulf States Paper Company, Tuscaloosa, Ala.

Timkens Maintain Correct Alignment In Shartle Jordans

The jordan engine is essentially a precision machine, and continuous satisfactory operation depends upon the maintenance of proper alignment between plug and shell.

That is one reason why Shartle Brothers Machine Company, Middletown, Ohio, recommend and use Timken Bearings in their "Miami" jordans.

To users of these machines it means production insurance, for uniformly correct contact between plug and shell results in longer service from the filling and, equally important, a first class jordaning job at all times.

Speeds may go up—but Timken Bearings hold vibration down, thus adding years to machine life. Lubrication becomes easier, cleaner, more positive and more economical—for all that is necessary is a shot from the grease gun every month or so. Maintenance costs lose their significance.

At the root of these Timken economies—in jordan engines, paper-making machines, fourdriniers and other paper mill equipment is the exclusive radial-thrust load-carrying combination of Timken tapered construction, Timken *POSITIVELY ALIGNED ROLLS* and Timken-made steel.

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

TIMKEN *Tapered Roller* **BEARINGS**

NEW YORK CITY

Extension Granted to Board Mills

At a meeting of creditors of William G. Shortess and the board and paper manufacturing companies operated by him; namely, the Federal Paper Board Company, Inc., of Bogota, N. J.; the Inland Paper Board Company, Inc., of Norwich, Conn., and the Midvale Paper Board Company, Inc., of Rossman, N. Y., held in the Hotel Belmont, New York City, on January 7, with approximately 350 creditors present, the creditors approved in principal the extension of time for six months recommended by the creditors' committee, with an option for a further extension of six months if deemed advisable, and many of the creditors in attendance at the meeting immediately affixed their signatures to the agreement.

The creditors also approved the appointment of the legal firm of Davis, Polk, Wardwell, Gardner & Reed, which had been acting in the matter for the Guaranty Trust Company, to represent the creditors' committee, and approved also the appointment of an auditor for each of the three companies involved, to whom shall be given control of all the books of account and bank accounts of Mr. Shortess' companies. A financial statement submitted by the three companies involved showed that their current liabilities amount to slightly more than $1,000,000, and their quick assets to slightly over $600,000.

David Stoddard Walton, often referred to as the "grand old man" of the paper trade in New York City, president of D. S. Walton & Company, paper jobbers, mill agents and importers, and chairman of the Board of the National Folding Box Company, of New Haven, Conn., died at his residence in Llewellyn Park, West Orange, N. J., on January 25 at the age of 87 years. Mr. Walton was born in Chesterfield, N. J., and besides his paper industry connections, he was a director of the Essex County Trust Company, of East Orange, N. J., and a former official of insurance and financial organizations.

Fred Enders, manager of the wood pulp department of Bulkley, Dunton & Company, 75 Duane street, New York, left for a quick business trip to the primary pulp markets in Europe early in January. He expects to return home within five or six weeks.

Announcement is made from the New York headquarters of the International Paper and Power Company that William Chamberlain has been elected a director of the company.

John C. Collins, first vice president of the Certain-teed Products Corporation, of New York, died after an operation for appendicitis in the Polyclinic Hospital, New York, on January 15, at the age of 46 years. He was a former resident of St. Louis, where he started his career with the General Roofing Company, predecessor to the Certain-teed Corporation, and moved to New York when the company's offices were transferred here from the Middle West five years ago. A widow and a daughter survive.

The M. & F. Schlosser Paper Corporation, paper merchants, for many years at 220 West Nineteenth street, New York, have leased larger quarters in the Holland Plaza Building, just completed on the triangular block opposite the entrance to the vehicular tunnel under the Hudson River, and will move to the new location shortly.

Fred L. Schenck has rejoined the selling staff of C. B. Hewitt & Bros., Inc., paper merchants of 16-25 Ferry street, New York, and is again calling on the trade in the metropolitan district offering the reliable line of paper and boards handled by that organization.

Louis Marcovitz, of Darmstadt, Scott & Courtney, Inc., dealers in and importers of papermakers' supplies of 150 Nassau street, New York, left for Europe on a several months' business trip January 10 on the steamer Bremen. Also on the same liner was Ernst Mayer, importer of papermaking rags and other paper mill supplies, of 398 Broadway, New York, who expects to spend a few weeks traveling through Europe on business.

The United Paperboard Company, Inc., with principal offices in New York and mills at various centers through the United States, reports a profit of $253,172 after expenses but before depreciation and Federal taxes for the six months ended November 30 last, compared with $233,278 for the six months ended November 24, 1928.

Hewitt Co. Buys Warehouse

C. B. Hewitt & Bros., Inc., among the oldest and best known paper and board jobbers in the metropolitan area, of which Robert A. Alberts is president, have bought the five-story building at 23-25 Greene street, New York, and after alterations are completed, the company will move its offices and warehouse from the present location at 16-24 Ferry street to the new building. The new home of the concern is in the heart of the downtown business district, and very conveniently situated near the main transit lines, the Hudson vehicular tunnel and the East River bridges.

In keeping with the progressive spirit shown by the houses distributing the Hubbs Lines, a special representative in the person of H. A. Vandyck, well-known in the wall paper industry through his connection with the Wall Paper Manufacturers' Association of the United States and as editor of the Wallpaper Magazine, has been retained to take charge of the advertising and sales promotion activities of Charles F. Hubbs & Company, paper merchants of New York City, and the other companies allied with the Hubbs organization, including the Hubbs & Howe Company, Buffalo, N. Y.; Hubbs & Corning Company, Baltimore, Md.; Hubbs & Hastings Paper Company, Rochester, N. Y.; Charles F. Hubbs & Company, Troy, N. Y.; Hubbs & Howe Company, Cleveland, O., and the Interstate Cordage and Paper Company, Pittsburgh, Pa.

The Clinton Paper Corporation, paper merchants of the Bronx section of New York City, has filed notice of an increase in capitalization from $50,000 to $75,000.

The Robert Gair Company, large manufacturer of paper, board and paper boxes and containers, with main offices in New York City, has passed the quarterly dividend of 68¾ cents a share on its Class A stock due at this time.

Announcement is made of a change in the title of the company heretofore known as the E. K. Mansfield Company, paper mill engineers, of 501 Fifth avenue, New York. The name of the company henceforth will be Mansfield, Bilton & Kent. No change in the policy of the company will be occasioned.

Resistall Certified Papers

The L. L. Brown Paper Co., Adams, Mass., announces the development and perfection of an entirely new kind of paper—a paper which defies water, grease, many acids and chemicals and extreme handling—a paper which, when soiled, can be sponged with soap and water almost as if it were celluloid.

This unique paper is known as "Resistall," and as the name suggests it is resistant to all the usual hazards to which records and documents are subjected. This paper is now made and stocked in three lines—Resistall bond, linen ledger and index bristol.

Among the principal purposes for which this paper is ideally suited are maps, charts, construction records, field books, shop and garage records, registration forms, certificates, index cards, etc.

The company will be pleased to send samples of these new papers upon request.

A GUARANTEE INSTEAD OF A GUESS

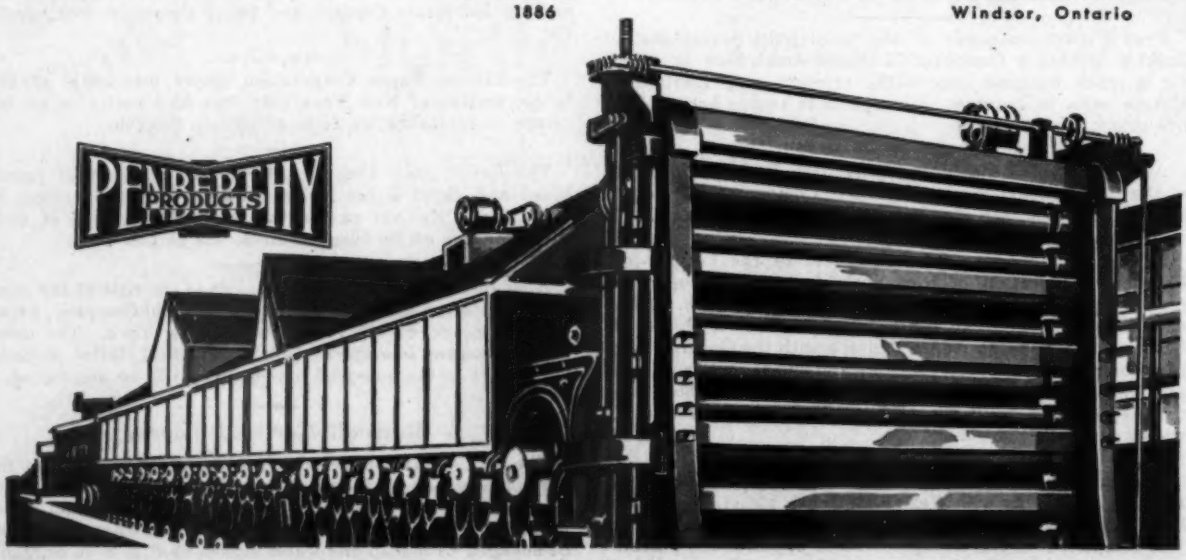
YOU can now pay for Penberthy Paper Drier Equipment out of the savings it is guaranteed to make. But to determine whether or not the Penberthy Equipment will be a profitable investment for you, an engineering survey of your present operating costs and conditions is made. You will then receive a proposal embodying a written guarantee that the Penberthy Equipment will effect definite savings. This is based upon the records of a large number of previous installations.

This survey is made under the supervision of your engineers but without expense to you or obligation to purchase the Penberthy Paper Drier Equipment.

This offer is irrespective of the drying system now in use. Almost without exception, the Penberthy Equipment will pay for itself in less than a year.

Wire or write for complete information.

PENBERTHY INJECTOR COMPANY
Established in 1886
DETROIT
Canadian Plant: Windsor, Ontario



PENBERTHY PAPER DRIER EQUIPMENT

PACIFIC COAST

WASHINGTON

Puget Sound Co. Buys Pulpwood Tract

The Puget Sound Pulp & Timber Company, Everett, has purchased on conditional sale a large tract of pulpwood timber on the south fork of the Stilaguamish river watershed said to comprise 13,480 acres and to contain 510,660,000 board feet at a price roughly estimated at $795,980. The tract is located in the Snoqualmie National forest.

Timber on this tract is over-mature to decadent, according to foresters and surveyors, but because about 72 per cent is pulp species it is regarded as extremely valuable. There are 260,000,000 feet of hemlock and about 1000,000 feet of silver fir. The bid on Douglas fir, red cedar, Alaska cedar, Sitka spruce and western white pine was $3 per thousand, while $1 was bid on hemlock and silver fir. Western red cedar on the tract will amount to 100,600,000 feet.

According to terms of the proposed agreement the Puget Sound Pulp & Timber Company cannot cut less than 16,000,000 feet a year nor more than 25,000,000, the reforestation program to be adhered to closely and a 70-year cycle idea observed. At the end of that time the plan shows that the tract will be ready for a fresh start in cutting.

The Puget Sound Pulp & Timber Company is now rapidly rushing to completion the 175-ton mill for bleached sulphite pulp at Everett, and the company also has a 50-ton pulp plant at Anacortes and a 90-ton mill at Bellingham. The Everett plant is estimated to cost about $3,500,000 and will start operation in June. Two fourdrinier machines 152 inches wide are included in the equipment of this plant which is to be the very latest modern type in all its features. Ossian Anderson is president of the company. The bleaching system is being installed by the Pulp Bleaching Corp. of New York.

The Columbia River Paper Mills, Vancouver, was among the plant affected by the severe cold weather during January when the Columbia river froze so solid that ice cutters were needed to clear the way for provision boats to the river towns and obviously no possibility of manufacture and shipping existed for the mills in the vicinity. Similar conditions existed in cities further north as logging was almost at a standstill. This part of the northwest experienced the severest winter in more than 40 years.

The American Newsprint Company was incorporated in Seattle with a capital stock of $100,000 by Marion Stixrood and Paul P. Ashley, articles being filed January 20, for the purpose of dealing in lumber and forest products.

The Zellerbach Paper Company in Spokane is now occupying the fine new headquarters which replaced the building destroyed by fire last year.

A new pulp mill is said to be under consideration at Palouse which will cost with equipment about $85,000. Harry Linden is said to be interested in organizing a company in this town to finance such a project.

OREGON

The Oregon Sulphite Pulp Co. was incorporated last month in Portland, by F. Powers, Aileen Gullans and F. M. De Neffe, with Jay Bowerman as attorney. Although no confirmed information is available there is a current report that the company may comprise a number of stockholders from the former Northwest Pulp & Paper Company which has been in difficulties followed by scattered organization.

Wholesale distributors of paper in this territory say that the volume of business at the close of the year was about equal to the year previous. In their report to Dun's review, it appears that gains were made up until about the time of the stock market crash, after which a general checking in all lines of mercantile activities occurred. Paper dealers do not anticipate that this slow condition will last after spring buying starts. The fact that the entire pulp and paper industry in the Pacific northwest is taking on increased importance promises a generally good business for paper distributors. Paper prices here, the report states, are on the whole steady and not materially changed from those of the same season a year ago.

Myron G. Dunnagan, manager of sales for the Pacific Northwest Paper Mills, Inc., Portland, for sometime, has gone east to accept the position of sales manager of the New York office of the company.

Joseph Prudhomme, secretary of the Western Paper Converting Company of Salem, whose home was in Portland, died rather suddenly January 23.

Oregon Pulp & Paper Shows Progress

The Oregon Pulp and Paper Company, of Salem, had a fine write-up in the New Year's edition of the Oregon Statesman, local newspaper. During 1929 an aggregate of 122,000,000 pounds of paper was manufactured in the company's plant. In 1927 this mill produced 170,000 pounds of paper each day, in 1928 this was increased to 200,000 pounds daily and last year it reached a capacity of 200,000 pounds.

F. W. Leadbetter, prominent paper capitalist on the coast, founded the mill nine years ago. The management is said to have plans for an expansion program in the near future which may include a new paper machine. K. W. Heinlein is resident manager.

This enterprise is really two mills—the sulphite mill and the papermaking mill proper, the complete process of making paper being completed at the plant. Mr. Leadbetter is president, A. S. Fleming is secretary and treasurer. Joe Kaster has been superintendent for sometime and E. A. Weber is sulphite superintendent.

Irving T. Rau, secretary-treasurer of the St. Helens Pulp & Paper Company, who has been acting president of the St. Helens chamber of commerce for several months, was elected to head that body at the annual election late in January.

Zellerbach and Publishers Promote Development

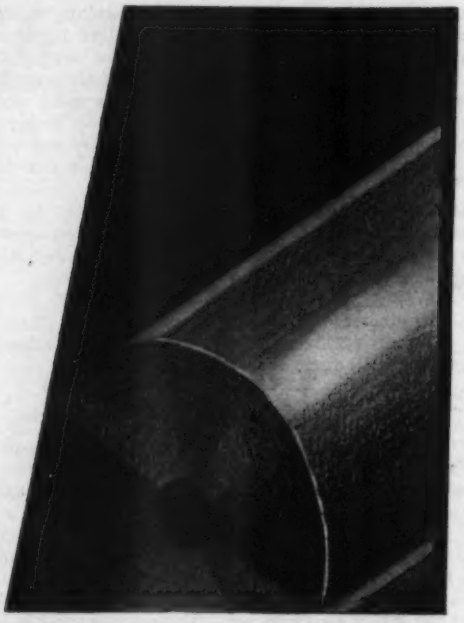
B. F. Heintzleman, assistant district forester in charge of forest management in Alaska, made a brief stop in Portland, January 10, and gave some details on the pulp and paper industrial development which is under consideration by the Zellerbach interests and Harry Chandler and George T. Cameron, California publishers. Closing of the transaction between the paper interests and the federal power commission is pending at this writing and it is not expected that there will be any announcement of plants to be built until a permit is granted.

Investigation and surveys have been under way by the two newspaper companies and the Zellerbach interests since 1927. The power situation has been carefully scrutinized by hydraulic engineers, and some work has been done in surveying transmission lines and similar requirements for operating the proposed project.

Mr. Heintzleman was on his way to San Francisco to confer with the interests there and he expected to proceed to Washington, D. C., to confer with forestry officials and other federal commissions.

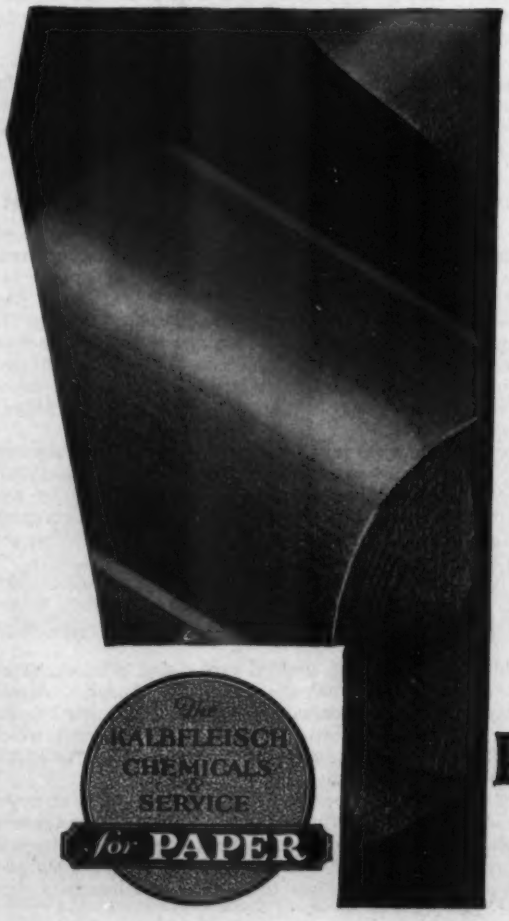
Ten billion feet of pulp timber, spruce and hemlock, at an estimated cost of $5,000,000, are features of the plan. A mill at Juneau and one at Ketchikan are mentioned in early reports as being under consideration. A conditional permit which would allow the two companies to use from 50,000 to 60,000 horsepower has been granted.

All of the pulp is to be used in the manufacture of newsprint and the timber cutting will be paid for as it advances, although, according to Mr. Heintzleman, the companies will be obliged to pay for their timber in accordance with prevailing prices after the first ten-year grant has been con-



BACK PRODUCTION PLANS WITH GOOD CHEMICALS...

KALBFLEISCH CHEMICALS



THE ambition of progressive mills is to manufacture a better product at a lower cost. Good chemicals will help—in fact, they are essential to that fineness which paper-makers seek.

Kalbfleisch is peculiarly well fitted to serve you. Many years of experience in developing chemicals especially adapted to paper needs enables us to meet the most diverse requirements.

There are six Kalbfleisch producing plants ...six convenient sources of dependable supply...look upon them as your warehouses for the prompt delivery of quality chemicals.

Kalbfleisch Chemicals include:

ALUM *(both Commercial and Iron Free)*		ROSIN SIZE
CASEIN *(Domestic and Imported)*		SALT CAKE
CHINA CLAY	GLAUBER'S SALT	SODA ASH
SULPHATE OF SODA	MURIATIC ACID	AMMONIA
SATIN WHITE	SULPHURIC ACID	NITRIC ACID

The KALBFLEISCH CHEMICALS SERVICE for PAPER

The KALBFLEISCH Corporation

PLANTS: ERIE, PA. KALAMAZOO, MICH. CHATTANOOGA, TENN.

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PLANTS: ELIZABETH, N. J. WATERBURY, CONN. DE QUINCY, LA.

cluded. It has been suggested that the primary cost of the timber during the first ten-year period will be 50 cents a thousand feet of hemlock and $1 for spruce. The conditional awards of timber and water rights will terminate in July.

If the plans of the two companies, when filed, are satisfactory to the federal interests concerned, the companies will be allowed until July, 1932, to get the mills in operation. The government stipulations call for 500 tons as the daily output after the mills get operating to capacity.

In order to meet the conservation requirements in the timber cutting, only a certain amount of timber will be cut each day and a certain amount each year, the cutting being done on the cycle plan.

Pacific Paper and Paper Products Co.

Pacific Paper and Paper Products Company is the name of the firm which will construct a pulp and paper mill at Eugene, according to announcement made January 29. Articles of incorporation were expected to be filed at Salem immediately with construction work to get under way early in February with completion scheduled for August of this year.

The project will cost probably $500,000 and initial capacity of the plant will be 10 or 12 tons a day. It is the plan of the company to enter a specialized market not yet intensely active on the coast and to manufacture any one of six common grades of paper for which there is a great demand in the territory.

Joseph H. Koke of the Koke-Chapman Printing Co., Eugene, who has devoted much time to the organization work, has been named president. P. J. Lamoureaux of Portland, who was recently connected with the Oregon Pulp & Paper Company of Salem, and who has more than thirty years of papermaking experience to his credit, will be vice president and general manager, being in active charge of the plant. George J. Wilhelm is also a vice president; E. O. Immel, local attorney is secretary, and A. A. Rogers, president of the First National bank is treasurer. Besides these officials, the directorate includes: Dr. W. H. Dale, Roy W. Stien, Albert W. Stien, Frank X. Schaefers and James W. Seavey.

Other promoters of the project include Schaefers Brothers of Eugene, and J. E. Smith, vice president and manager of the Sterling Founders Corporation of Portland, who will act as fiscal agent, maintaining offices in the Miner building, Eugene.

CALIFORNIA

Gordon Murphy, for twenty-three years experienced in printing papers, has been made city sales manager for the Zellerbach Paper Company in the Los Angeles division.

New headquarters of the Bates Valve Bag Corp., are now ready in Los Angeles, according to the Austin Company, builders.

When the Pacific Pulp & Paper Traffic Association met in annual conference in San Francisco late last year, rate adjustments were the important topic and west coast carriers agreed to co-operate fully with the paper industry to obtain uniform and reasonable rates for the coming 1930 business.

J. D. Zellerbach, executive vice president of the Crown-Zellerbach corporation left San Francisco early in the year for a trip to New York where he will spend several weeks inspecting eastern operations of the company. Mr. Zellerbach announced before leaving that the 1930 expansion program of the company will be mostly along the line of paper specialties. In the Carthage, New York mill of the West End Paper Company which was recently acquired by Zellerbach interests, will start operation in January after a remodeling program and will produce 9,000 tons annually. National Paper Products Company, another mill in Carthage owned by Crown-Zellerbach, will also be visited by Mr. Zellerbach.

The beautiful mural paintings being installed on the walls of the executive offices of the Crown-Zellerbach Corporation in San Francisco are of much current interest not only to the company but to the trade in general and to all who enjoy an artistic story of industry in action. The panels are by Warren Chase Merritt and they depict the romance of the paper industry from the tree to the finished product.

Los Angeles distributors report sales of paper slightly under 1928, but profits were better due to reduction in overhead in many cases and credits were also better because more discrimination was shown in accounts.

C. E. McKillop, who was recently with the Portland office of the Graham Paper Company, will be with the San Francisco office effective early this year.

The Los Angeles Paper Box Company, Los Angeles, will build a $50,000 addition to the plant, including equipment. The structure will be 150x200 feet of reinforced concrete one-story high.

Worthington Machy. Corp. of California, Ltd.

The Worthington Pump and Machinery Corporation, New York City, announces that its interests in the California territory will be served through a local company, the Worthington Machinery Corporation of California, Ltd., with headquarters at Los Angeles and San Francisco.

The new company will take over the sales and engineering staff and the warehouse facilities of The Worthington Company, Inc., in California. The president is H. D. Cornell, who has been president of the Worthington Machinery Corporation of Oklahoma.

Link-Belt Opens Office in Vancouver

Link-Belt Limited recently opened a branch office in the Standard Bank Building, 510 West Hastings St., Vancouver, B. C., with Frank B. Wetherill, in charge.

Mr. Wetherill joined the Link-Belt organization 15 years ago, and for a number of years has been manager of the company's office and warehouse in Portland, Ore. He is well versed in the application of materials handling and power transmitting machinery to the needs of industry in the Pacific Northwest.

In establishing this new office, it is aimed to supplement the service which has been rendered through Fleck Bros. Ltd., Canadian Fairbanks-Morse Co. Ltd., and A. R. Williams Machinery Co. Ltd., who, of course, will continue as official distributors of Link-Belt Chain and other merchandise material.

This step is taken to serve more intimately the growing list of Link-Belt customers in British Columbia.

SOUTHERN

M. J. McMahon has been appointed general traffic manager of the Great Southern Lumber Co., the Bogalusa Paper Co., Inc., the Bogalusa Turpentine Co., and the Bogalusa Stores Co., according to announcement made at company headquarters, Bogalusa, Ia. Mr. McMahon's appointment took effect January 1. His office is in the Whitney Bank Bldg., New Orleans.

Gulf Paper Products, Inc., Beaumont, Tex., plans the erection of a paper bindery in that city to adjoin present property of the company, to cost approximately $50,000. The unit will cover 40,000 square feet and will be located at 875 Fifth St. The company will import bulk paper for the purpose of conversion into tablets and blank books. Machinery for the new plant has already been purchased.

The mill of the International Paper Company near Moss Point, Miss., has been closed down for an indefinite period. Officials at the mill explained that 450 men were employed at the Moss Point plant, all of whom were discharged.

WHAT ABOUT LUBRICATION

The most successfully operated mills in the paper industry are those where closest attention is given to doing things better and saving costs.

It is astonishing what may be accomplished by even such a matter as lubrication. Some executives regard it as comparatively unimportant. Others have found in effective lubrication a way to saving thousands annually. Actually—the yearly consumption of lubricants is often less. But the big saving comes with the results of effective lubrication in better machine operation, reduced depreciation and fewer shutdowns.

Ask to have a Texaco Lubrication Engineer visit your plant. These men have had long experience in paper mill lubrication. They know lubricants and they are backed by a complete line of Texaco Lubricants for every purpose. This experience is freely available to operators everywhere. Write The Texas Company first.

TEXACO LUBRICANTS

THE TEXAS COMPANY
17 BATTERY PLACE
NEW YORK CITY

Practical Helps for the Mill Man

Belt Facts

WHEN a belt breaks and machine production is impaired, is the first thought one of condemnation for the belt? If the belt life seems to be shorter than it should, give serious thought to the method used in making the original installation. Were the ends of the belt cut absolutely square before joining? Were the lace holes of proper size and were they properly aligned? Did the belt start crooked when placed in operation, or was it put on the pulleys too tightly? Were the pulleys out of alignment? Was the belt allowed to operate with belt shifters or with other equipment rubbing the edges? Such questions and many others might come to mind relative to any belt failure.

Many belting problems would be overcome if belts were properly installed. One should never guess at any of the work being done. It is necessary to know that the ends of the belt are absolutely square before trying to join them. A steel square will aid in obtaining this information. A torn belt often results from a crooked joint. If the belt starts crooked, it should be removed and the joint checked before injury to the belt occurs. The tension of the belt should be carefully adjusted. A loose belt slips, and a belt that is too tight places unusual stress upon the belt as well as equipment bearings. Shifters and other equipment should never be permitted to rub against the edges of a belt. Such a condition not only causes wear but might even cause one edge of a belt to elongate.

If a belt slips off the pulleys during operation, it is a sure sign that something is wrong. The remedy will depend on the cause. Correct the cause and the results will be pleasing to even the most discriminating.

Clean Windows

REGULAR window cleaning should become part of the regular routine work of the plant. Dirty windows are expensive in that they necessitate the use of an excess of artificial light and at the same time increase the possibility of accidents. Dirty windows might even influence the working force to the point where they might become careless and slovenly. Neatness in plant surroundings cannot help but breed neatness in industrial workers. Care should be taken in any plant cleanliness program to leave time for window cleaning. It not only brings respect from plant employees, but is a good advertisement of a clean plant to all who pass by on the outside.

Bursting Strength of Pipe

THE pressure of a liquid or gas in a pipe is exerted in every direction and tends to tear the pipe apart longitudinally. Several formulae have been developed to determine the approximate bursting strength of pipe under internal pressure. One formula that has been commonly used for this purpose might be expressed as

$$\frac{S}{R} = \frac{d}{2t} \text{ when}$$

S equals the resisting tensile unit-stress, R equals pressure per unit area of liquid or gas, d equals diameter of pipe, and t equals thickness of pipe. The unit pressure R for water may be computed from a given head by finding the weight of a column of water of that height and one square unit in section. If the height of the column of water is given in feet, the unit pressure per square inch may be computed by multiplying this height by 0.434.

This use of this formula is demonstrated in making the calculations of a typical problem, such as—Find the factor of safety of a 12-inch cast iron water pipe with a wall thickness of ⅝ inches and an ultimate tensile strength of 20,000 per square inch that is functioning under a head of 300 feet. In this case, R equals 0.434 x 300 or 130.2 pounds per square inch. The unit stress then becomes—

$$S = \frac{12 \times 130.2}{2 \times \frac{5}{8}} = 1250 \text{ pounds per square inch}$$

The factor of safety would equal $\frac{20{,}000}{1250}$ or approximately 16 which is ample under most conditions.

Losses Due to Waste Material

SELDOM does one appreciate the losses which are incurred through the careless waste of materials. In line with production, materials for maintenance and development are often obtained too easily. A study of the junk pile of many pulp and paper mills will often reveal items of equipment of supplies that had been purchased without serious consideration and after installation were found wanting. Such items are, therefore, discontinued long before wearing out. Other times, care is not taken in estimating the quantity of material required for a given job, and the excess material after the job is finished is frequently scrap. Losses of this kind in the average plant, if carefully analyzed would show a monetary value much higher than at first might be realized.

One manufacturing establishment through its house organ recently emphasized the importance of some of these losses by tabulating them. Brass, for example, cost 20 to 40 cents per pound, while scrap sold for $8.00 per ton. Aluminum castings cost $1.00 per pound, while scrap sold for 15 cents per pound. Glass cost 40 cents per pound while scrap was worth $2.50 per hundred pounds. Steel cost 5 cents per pound while scrap was worth $8.00 per ton. Such a list showing comparative values might be increased indefinitely, but it would show simply the importance of reducing losses due to careless waste of materials.

Paper Machine Efficiency Chart

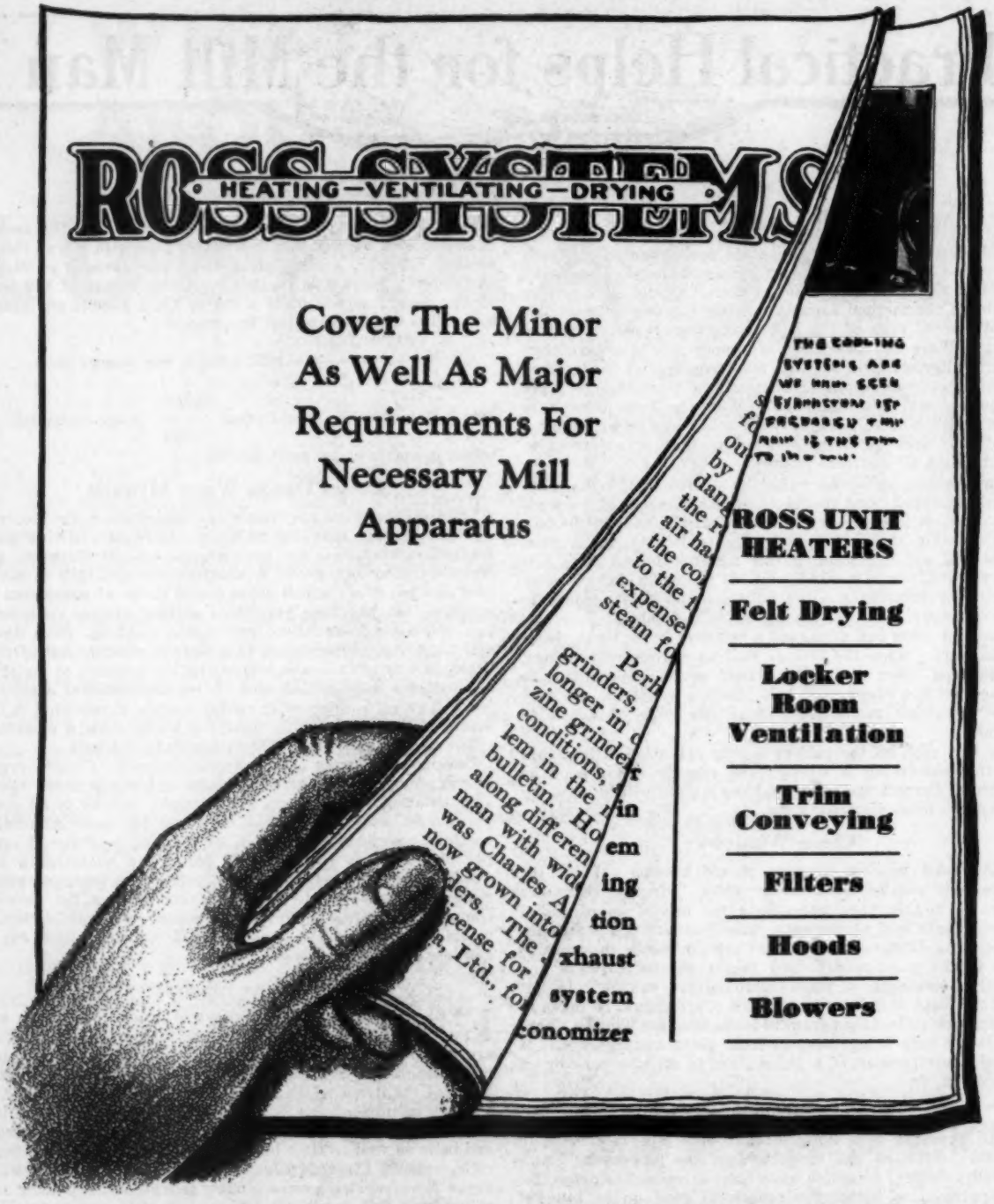
EVERY paper mill superintendent should know for any period of time the lost time and operating efficiency of every paper machine over which he has control. Are figures presenting this information commonly available to him? Some of the items which might be used in the preparation of a chart to present this information would include time lost in putting on wires, jackets, press felts, dryer felts, aprons and belts as well as time lost in repairing and changing press rolls, washing of press felts, sewing and joining of wires and dryer felts, repairing wire guides, felt guides, repairing machine drive and auxiliaries, as well as time lost in washing up and starting up.

Included in the information on operating efficiency of an individual machine would be data on the total number of days run, total product for the month, average product for the day, total operating hours during the month, total lost time in hours, actual operating hours, basis weight, actual weight and average trim of stock on machine, average speed, possible production per hour at 100 per cent efficiency, actual production per hour, actual percentage of efficiency, and such other information as it seems might logically be desired on such a chart.

All of this data can be presented readily on a well designed chart, and would certainly serve as a ready reference and reminder at all times.

ROSS SYSTEMS
HEATING—VENTILATING—DRYING

Cover The Minor
As Well As Major
Requirements For
Necessary Mill
Apparatus



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ROSS ENGINEERING OF CANADA, LIMITED
NEW BIRKS BLDG., MONTREAL

ROSS SYSTEMS
HEATING—VENTILATING—DRYING

Canadian News

The Newsprint Situation

The pulp and paper industry has weathered a most critical year. The drastic reduction in the price of newsprint, which for a time threatened the prosperity of the industry, was counteracted by courageous co-operation. Moreover, in spite of a considerable increase in the total capacity of the mills, they were operated throughout the year at an average of 85.5 per cent of rated capacity as compared with 82.0 per cent in 1928, and employment was maintained in the woods and in the mills with little, if any, reduction wages. The total production of Canadian newsprint mills for the year 1929 established a new high record at 2,728,827 tons, an increase of 14.6 per cent over the 1928 production.

But in spite of this showing, the year opened with a distinct feeling of disappointment and depression, due to the failure to bring such a readjustment of prices as would place the newsprint producers on a remunerative basis. The fact that International Paper did not see fit to follow the majority of the Canadian manufacturers in establishing a higher price on a three-year contract basis has made it inevitable that all the companies will have to carry on, for the first six months of 1930, on the old basis; and the other large Canadian producers decided to continue the 1929 price for the first six months of the present year, as announced in these columns last month. But while the Canadian companies naturally feel some regret that the time they had marked out was found to be impracticable, hopes are entertained that conditions at the end of the first six months will justify their position and will lead to a revision of prices in accordance with their original plans.

The great point the Canadian companies have sought to achieve is the equitable distribution of the tonnage, and that they have been able to bring about. The organization of the Canadian Newsprint Institute, and the willingness of the companies represented in that organization to work together, has enabled them to distribute tonnage in a fairly equitable manner, so that no mill has had to close its doors, and there has been no temptation on the part of any of the members to get out and scramble for business at any cost to keep their machines going and their workmen employed. It is felt that if they keep together for the next six months in the way they have been doing for the past six months, and prevent a wide-open, cut-throat market, which is the only alternative to co-operation, they will be in a pretty strong position when the time next comes to form consideration of the price question.

There is every reason to assume that they will do so, and it is upon this point that the influence of the Quebec and Ontario governments has been brought particularly to bear. These governments have been most insistent that Canadian International Paper, the subsidiary of International Paper in Canada, should co-operate by not taking more of the available business than is their fair proportion. It is the general feeling that the company is giving the desired co-operation as far as their Canadian mills are concerned.

There is also another angle to the situation, which has been mentioned but has not been emphasized as much as it should, and that is that the proposed $5 a ton advance in prices would not all go into the pockets of the manufacturers and shareholders of the various companies. The Quebec and Ontario governments realize that with the present price of newsprint the companies cannot provide as they ought for forest conservation, and the only way that the governments can exact heavier stumpage rates for the purpose of forest protection is for the manufacturers to get a higher price for their product. The Provincial Governments are not interested primarily in seeing that the companies get more profits, although as a matter of fact there are few companies paying dividends on their common stocks. To force the companies to pay higher stumpage dues for the purposes of preservation and replenishment of the forests while these companies are unable to get adequate returns for their products would be suicidal. But the governments are determined that they will not continue to expend the people's money for the preservation and upbuilding of forest reserves in order to provide the publishers of the United States with newsprint below the actual cost, and decisive steps of some kind would appear inevitable.

To Develop Labrador Hinterland

Sir William Coaker, member of the Executive Council of Newfoundland, in the course of a recent visit to Canada, stated that negotiations were in progress with a syndicate representing English and Canadian interests looking to the acquisition by the latter of exclusive rights in the development of the Labrador, which was awarded to Newfoundland last year by the Privy Council.

Prominent in advancing the aims of this syndicate, he said, was Joseph de Champlain, a Canadian, who had held interests in the Labrador for many years. In addition to negotiations proceeding with this syndicate, consideration was being given to a proposition involving the construction of a newsprint mill with a capacity of 1,000 tons per day, on the Gander River, in Newfoundland. Back of this proposition are the Hearst newspapers, and an essential factor in its ratification, in view of the huge output of paper involved, is the awarding of timber rights in Labrador as well as in Newfoundland. This Gander proposition, Sir William said, has been so far advanced that a further conference will be held shortly in New York between representatives of the Newfoundland government and the Hearst interests.

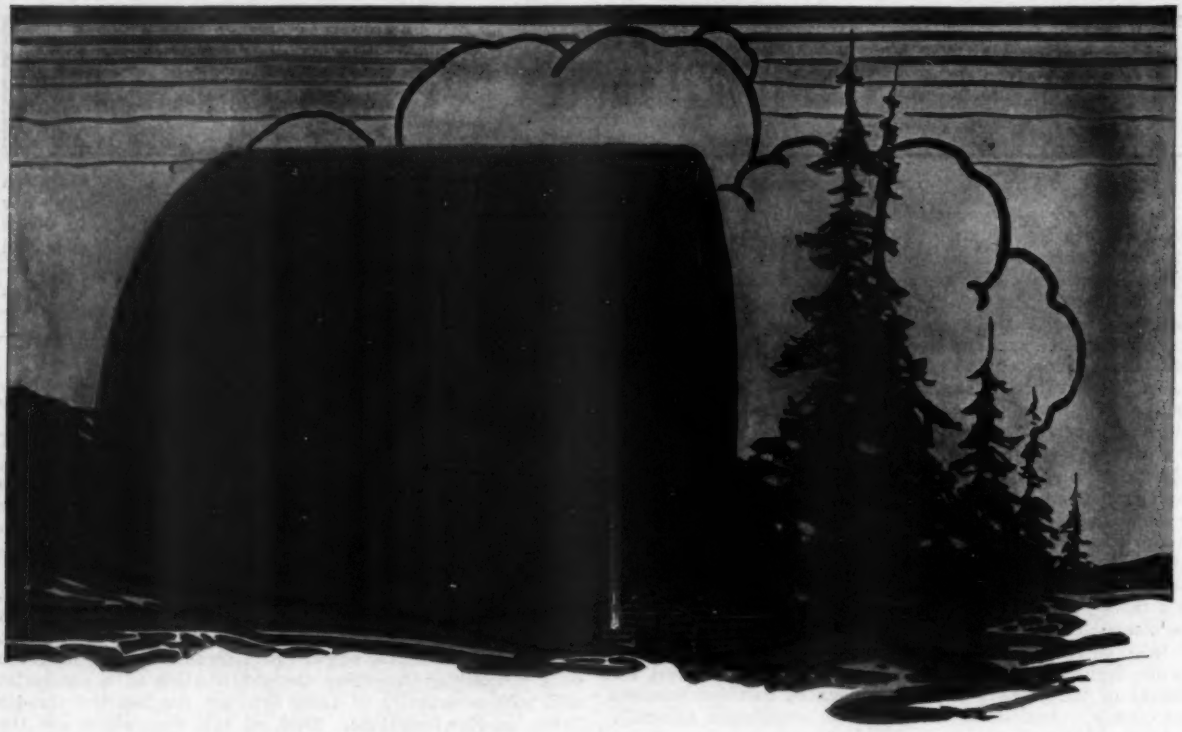
While the sovereignty of Labrador is not involved in the present negotiations, the government of Newfoundland would much prefer that Canada acquire the territory by purchase. A necessary condition of such an eventuality would be the confirmation of the rights awarded the Hearst interests in any contract entered into.

An important conference has been planned for the coming year to combat the menace of fires in forests in Canada. According to a recent announcement of Hon. Charles Stewart, Minister of the Interior at Ottawa, representatives will assemble from different provinces and give specific consideration to the suppression of the fire hazard. During the past year the danger from woods conflagration was exceptionally high and the number of fires unprecedented, the only exceptions being New Brunswick and Quebec where climatic conditions were better than they had been for a long time past.

Mexican Market Reopened to Canadian Pulp

Word has been received from C. Noel Wilde, Canadian Trade Commissioner to Mexico, to the effect that the door is again about to be opened for the exportation of pulp to Mexico, owing to price conditions and other changes in the Mexican market.

The tariff regulations and rates have undergone some modifications which will tend to encourage Canadian manufacturers to begin again, after three years of restrictions, to offer their product to Mexico. The consular fee of 10 per cent and a surcharge of 10 per cent on duties which have hitherto been paid at port of entry have been removed. Rates of duty have, however, been readjusted in a manner to make the actual duty cost of getting into the Mexican market practically unchanged as to gross amount. The ways have been oiled by the changes, making it less troublesome to get at the Mexican buyers of pulp; and prices have hardened so as to make a bit more profit probable.



**Back of the ground wood industry—
the Norton Pulpstone.**

**Back of the Norton Pulpstone—
the world's largest makers
of grinding wheels.**

NORTON COMPANY
WORCESTER, MASS.

Canadian trade now supplied from Canadian plant

Grinding Wheels
Grinding Machines

NORTON
PULPSTONES

Refractories - Floor
and Stair Tiles

QUEBEC

MacLaren Power Application May Be Held Over

Prospects are that the application of the James MacLaren Co., of Buckingham, for permission to proceed with inundation of lands in connection with their project of developing some 250,000 horsepower at High Falls, on the Lièvre River, will be held over for a time. The company has built a pulp and paper mill at Masson, a short distance from Buckingham on the line of the Canadian Pacific Railway, and in order to secure the necessary power for its operation it wishes to develop the falls, about 25 miles farther up the Lièvre River. Most of the property which will have to be submerged, especially that situated in Papineau county, has already been secured by the company, but a number of proprietors have so far refused to accept the terms offered by the company.

In the hope that it will be possible to come to amicable arrangements with the proprietors, the application will be held over. Permission of the Quebec Government is also required before lands may be submerged prior to having been acquired, and this permission has not yet been granted, nor will it be granted, it is understood, until all other efforts to acquire the lots have failed.

Rumored Merger in the Offing

The long awaited merger of St. Lawrence Paper Mills, Lake St. John Power and Paper Co. and Brompton Pulp and Paper Co. is said to be further advanced. The trend in the Canadian newsprint industry is along lines of consolidation, and merging of the three companies would tend to strengthen their position in face of the present unsettled conditions of the industry. It seems probable that St. Lawrence Paper will be the keystone of the merger.

The mills have an aggregate productive capacity of 927 tons of newsprint a day, with timber limits estimated to contain about 20,000,000 cords of pulpwood. A portion of Brompton's timber limits are adjacent to those of the Lake St. John Power and Paper Co., and this factor should be instrumental in reducing cost in timber haulage while other cuts in operating costs might be effected through the consolidation.

Canipco News

International Paper Co. has acquired additional timber limits in the Province of Quebec. The area in question was formerly held by the Escuminac Lumber Co. on the Escuminac river in Bonaventure county. The new limits are some sixty-four square miles in area and are heavily timbered. The situation of the new area, which is just across the Baie des Chaleurs from the new Dalhousie mill, should prove of great advantage to the new mill, which is to be opened in February.

John Manuel, chemist at the Gatineau mill, has been transferred to the new Dalhousie mill of the company.

Gatineau Electric Light Co., a subsidiary of International Paper, has submitted for approval by the Quebec Public Commission a proposed schedule of new rates for the St. Jérôme and Rawdon districts, with one-meter service and uniform prices for domestic consumption of all kinds replacing two-meter service and a host of rates applicable in different parishes.

John H. Metcalf, who had been general purchasing agent for Howard Smith Paper Mills, Ltd., for sixteen and one-half years, and for Canada Paper Co. for the past year, has resigned his position. The company has combined the woods department with the purchasing department, and R. J. C. Hanford has been placed in charge of the reorganized work. Mr. Hanford has for sometime been woods manager, and in this capacity has been supplying the mills with wood both from the Howard Smith limits and from purchases in the open market. In this connection alone, he has had considerable experience in the purchase of equipment and supplies.

Eddy Co. Sales Convention

A sales convention of the E. B. Eddy Co. staff was held at Hull last month, and a most enjoyable time was spent in business and pleasure. One of the features of the gathering was a luncheon, which was presided over by president V. M. Drury and was addressed by Howard Kennedy, manager of the Woodlands Department. He traced the history of log cutting in the pulp industry dating back to the early days of Canada, and the yearly loss of standing timber through fire and insect menaces and the amount of timber now used in the manufacture of paper.

Mr. Kennedy said that whereas years ago shantymen were 50 per cent French Canadian and Irishmen, today, with the exception of a small percentage of foreigners, those who earned their living in the bush are French Canadians. The English speaking element seems to have retired from this method of earning a living, said the speaker. Mr. Kennedy spoke of the mechanical transport now beginning to take the place of men and teams in the industry and said that the big companies after experience with "company men," and "big jobbers" had placed their log contracts with "small jobbers." The delegates to the convention paid a visit to the upper mills of the company and were shown the different processes of pulp and paper manufacture.

Lower Profits on Donnacona

The second annual statement of the Donnacona Paper Co., Ltd., shows for the fiscal period from January 1 to December 31, 1929, a reduction in profits as compared with the previous year. The statement for that year was the first statement issued subsequent to the reorganization. Profits for the 1929 period were $829,861, compared with $869,762 in the previous twelve months. Deduction for bond and debenture interest amounted to $625,000 and allowance for depreciation and depletion of timber limits was $201,956, a total of $826,956, as against total deductions in the previous year of $807,392. This left net profits of $2,905, as compared with $62,370 in 1928.

The directors, in the report signed by John H. Price, president, state that further improvement and betterments have been made to the mill properties during the year, amounting to slightly in excess of $250,000, from which benefits are already accruing in the form of reduced production costs. In the early part of the year the directors decided to construct an insulating board mill at Donnacona for the manufacture of high-grade insulating board products, with an annual capacity of 45,000,000 feet, or approximately 15,000 tons. It is expected that the new mill will be producing in February of this year.

Approval of an arrangement between the James MacLaren Co., and the municipality of Masson, in Papineau county, as well as with the school commission of that place, is provided in a bill now before the legislature. In virtue of its terms, the buildings of the company are to be assessed at a fixed valuation of $200,000 for a period of 20 years. For school purposes, the valuation is $200,000 for the first year, $250,000 from the second to the fifth year, $300,000 from the sixth to the tenth year, $400,000 from the eleventh to the fifteenth year, and $500,000 from the sixteenth to the twentieth year.

On January 11 the small fourdrinier machine in the experimental pulp and paper mill at the Pulp and Paper Research Institute, Montreal, was started up for the first time since it was installed in its new quarters, and worked to the satisfaction of all concerned. This machine was formerly housed in the old building of the Forest Products Laboratories of Canada, on University St., which was torn down to make room for the present building of the Pulp and Paper Research Institute.

The advertising department of Howard Smith Paper Mills recently brought Toronto distributors together to discuss future Howard Smith advertising. The various aspects of

An Industrial Induced Draft Fan

and What is behind it —

IN the industrial plant, the draft fans are as important a part of the equipment as they are in a mighty super station. On a proportionate scale, they represent as large a figure in the cost of power.

Naturally, then, the industrial plant engineer will want the finest fans obtainable. If he is burning pulverized fuel, he'll want the latest developments for that service, welded wearing strips and removable scroll liners. Under certain conditions a Super Turbo or Super Duplex Fan will increase his boiler efficiencies appreciably. If smoke and cinders are a nuisance, a Cinder Eliminating Induced Draft Fan will solve that problem.

For every phase of power plant work, Buffalo fans and Buffalo engineering can assist the industrial plant engineer. The same knowledge and experience that goes into the construction of fans for so many of the largest central stations is available for the power plant that requires one small fan.

Why not have efficient fans that stand continuous operation in your plant?

BUFFALO FORGE COMPANY

213 Mortimer St. Buffalo, N. Y.

In Canada: CANADIAN BLOWER & FORGE CO., LTD., Kitchener, Ont.

the problem are carefully discussed, and a number of points were cleared up. The company was also host to St. John, N. B., to executives of printing and publishing firms located in the Atlantic provinces. The gathering opened with a dinner, which was followed by a film depicting the processes used in the production of fine papers at the Howard Smith plants.

J. C. Day has been appointed engineer of the E. B. Eddy Co., at Hull, and W. S. Kidd has been appointed mechanical superintendent for the same company. A. C. Bowness, paper mill superintendent, is now devoting most of his time to research and technical control of production.

Workers Campaign of Unemployment

A delegation representing workmen in newsprint mills on the St. Maurice river and in the Chicoutimi district waited on Premier Taschereau and Hon. Honoré Mercier, Minister of Lands and Forests, on January 30, to represent to the Government that there is considerable unemployment among their number because of the fact that the mills of Canadian International Paper are working at 100 per cent of rated capacity, and even greater, while the mills in which they are employed work only at about 70 per cent of capacity.

Premier Taschereau told the delegation that the Government cannot control production in a mill, but as regards the matter at issue said that an understanding had been reached between International Paper Co. and the other mills, whereby International would operate its mills in this province at full capacity, and in return would close down their mills in the United States where the production was 125,000 tons a year. It was suggested to the Premier that there should be prohibition of the export of pulpwood cut on private lands, but Mr. Taschereau pointed out that this was a federal matter.

Mr. Taschereau added that the Government is at present trying to induce International Paper to terminate the agreement with the Hearst interests, under which paper is to be sold for five years at $55 a ton. The Premier added that International Paper controls only about 20 per cent of the newsprint output of Canada, and if the other companies were able to understand each other it should not be long before the price of paper would go up.

At the annual meeting of the Board Section of the Canadian Pulp and Paper Association, which was held in Montreal on January 15, F. R. Thorn, of Price Bros. and Co., was re-elected president.

ONTARIO

Abitibi Acquires Provincial Paper

Arrangement has been concluded between Provincial Paper, Ltd., and Abitibi Power and Paper Co., Ltd., as a result of which the latter will acquire at least 90,000 shares of the outstanding 100,000 shares of Provincial Paper, and the balance if available. In this connection Abitibi has applied to the New York Stock Exchange for the listing of 100,000 additional shares of its common stock. The basis of the arrangement is an exchange, share for share. No change in the management or personnel of Provincial is contemplated by Abitibi, nor in the policies that have characterized Provincial Paper's operations in the past. The offer has the approval of the larger shareholders of Provincial Paper, covering by far the greater part of the common stock. This stock is privately held and was created in 1927 when Provincial Paper was organized to take over Provincial Paper Mills, that had been in operation since 1909.

The acquisition of Provincial Paper, which manufactures fine book and writing papers and coated papers, will provide a more diversified output for Abitibi, whose output at present is limited to newsprint chiefly, with some bleached sulphite pulp. Provincial Paper has four mills in operation, in Thorold, Georgetown, Mille Roches and Port Arthur, all

Installation of "leadized" pipe in the Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis.

"LEADIZED" PIPE

Durability of Lead with Strength of Steel

Application of the "leadizing" patented process to pipe made of any wrought material makes it resistant to all acid solutions used in pulp and paper manufacture.

Water pipe lines that are "leadized" remain free from slime. Friction is reduced in "leadized" paper stock lines.

The chief engineer of one of Wisconsin's largest paper mills claims that they have never had such clean paper as they have since using LEADIZED PIPE. Is this of interest?

You are invited to meet us in our registered quarters at the Pennsylvania Hotel, New York City, during the convention of the American Paper and Pulp Association, February 17th to 20th, 1930.

SUBMIT YOUR PIPING PROBLEMS TO US.

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Engineers, fabricators and erectors of all kinds of piping systems

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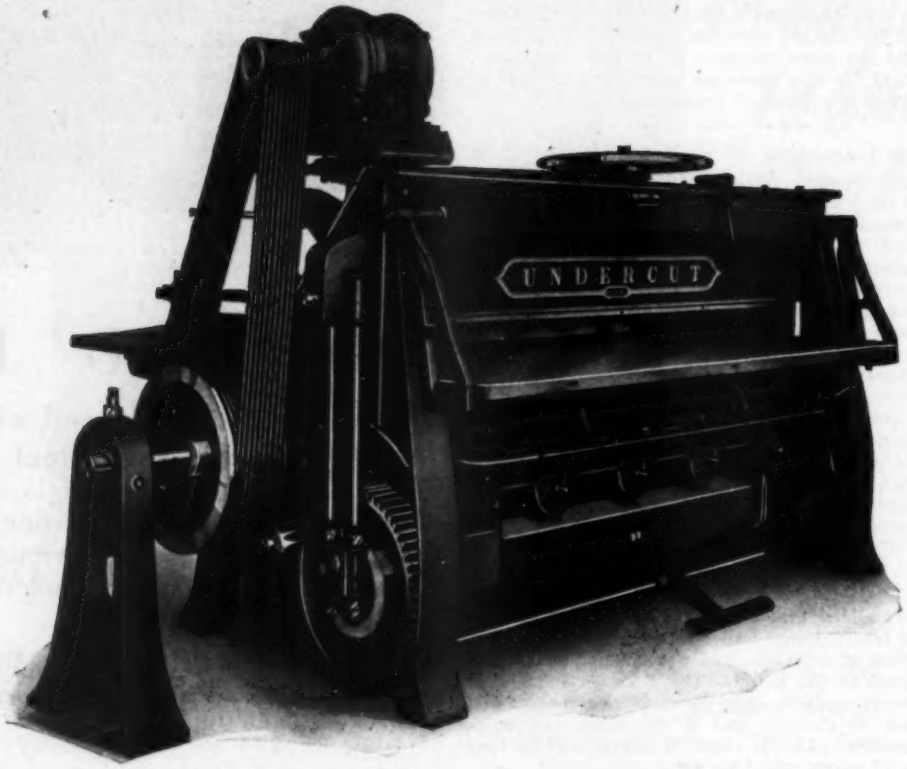

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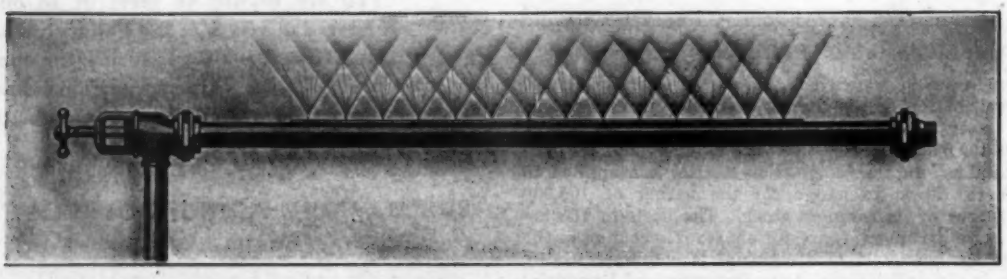


The Rain Storm Shower Pipe

The Smith & Winchester Mfg. Co.

ESTABLISHED 1828

South Windham, Conn.

PAPER MACHINERY—PAPER CUTTERS—PAPER BAG MACHINERY

in the Province of Ontario. Eight paper machines are operated, six paper coating machines and sulphite and groundwood mills. Production consists of about 45,000 tons of book and writing papers and 3,300 tons of coated papers per annum, while the Port Arthur mill, the latest to be installed, can produce newsprint as well. The company has 2,500 square miles of timber limits comparatively close to the Port Arthur mill, estimated to contain about 4,000,000 cords. The company has a well organized sales staff and supplies Toronto and the Ontario market generally from Thorold and Georgetown mills, the eastern markets from Mille Roches, and the western markets from Port Arthur.

The deal carries still farther the process of consolidation which Abitibi began on a large scale two years ago. At that time the Abitibi company was operating a 500-ton newsprint mill at Iroquois Falls, and had shortly before secured control of the sulphite pulp mill of Mattagami Pulp and Paper Co. (now Abitibi Fibre Co.) A new company was formed with each shareholder of Abitibi receiving double the number of shares, and an offer was made on a similar basis to the common shareholders of Spanish River Pulp and Paper Mills and other offers of exchange of stock on various bases were made to shareholders of Manitoba Paper Co., Fort William Paper Co., Ste. Anne Paper Co., and Murray Bay Paper Co. All these five groups were absorbed into the Abitibi organization, giving the company the largest newsprint capacity of any producer in Canada, amounting to about 2,100 tons daily. The amalgamation gave Abitibi over 30,000 square miles of timber limits, the largest of any newsprint group in Canada, and 190,000 developed and 500,000 undeveloped horsepower.

At the beginning of the year, Abitibi moved the offices of the president, managing director and executives into the stately new stone building on the west side of University Ave., Toronto. The head office was moved sometime ago from Montreal to Iroquois Falls.

With the support and co-operation of the Provincial Government, the Fort William authorities are negotiating with Abitibi to have the Fort William Division of the company re-opened after a shutdown of several weeks. L. R. Wilson, vice president and general manager, has stated that the shutdown is only a temporary one due to the present condition of the newsprint market, and has given assurance that part-time operation would be resumed very shortly. The mill has a capacity of 175 tons of news a day and has a personnel of about 300 employees.

A handsome new office building was recently completed at Fort Arthur for Provincial Paper, Ltd. The structure consists of two stories and a basement and is built of brick and in dimensions is 84 feet by 44 feet. The basement is being equipped with reading tables, cabinets for display of trophies won by mill employees, etc. Here the employees will assemble for their social functions. There is also in the basement a first aid room, quarters for nurses and a doctor, shower baths, etc. In the building are attractive offices for A. G. Pounsford, general manager of the company; Charles Gardner, superintendent of the woods department; Harry Stafford, chief electrician, and A. G. Hinzke, general superintendent.

Abitibi Closes Espanola Mill

Unemployment in Espanola, caused by the closing down of the Abitibi mill there, throwing some 350 men out of work, resulted in a deputation waiting on the Hon. William Finlayson, minister of lands and forests for Ontario, recently. The unemployed men's representatives pointed out that many hardships were resulting from the shutting down of the mill. It was explained that ever since the mill closed down on December 31st the employed had been kept on the staff without wages.

C. M. Belden, manager of the mill, has assured the employees that the company would not allow any of their families to suffer, and has organized special relief measures to insure protection. Food and fuel are being provided by the company to those who require it, and no employee is being charged rent during the long lay-off.

One Man Can Unload This Car In Half an Hour

THERE are several very definite reasons why more and more paper shipments are being made on skids. It means a saving all along the line both for the shipper and for the receiver.

Here are some of the reasons why it costs less to ship on skids than any other way.

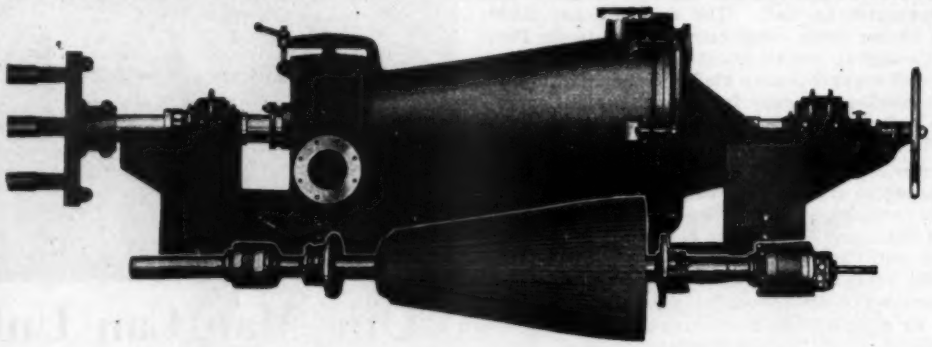
1. Workmen can handle larger individual loads.
2. Saving in packing time.
3. Saving in loading time.
4. Bracing in cars is unnecessary.
5. Easily unloaded (one man with a lift truck can unload a car in one half hour.)
6. Paper delivered as one unit directly to press or into storage.
7. Unpacked by merely cutting the strapping.

Faster, Better and Safer work can be done with Stanley *"Eversafe"* Strapping than with any other kind. Its Round Safety Ends, Round Safety Edges and Smooth Rust-resisting Finish cannot cut or scratch workmen's hands and arms.

Send for new booklet which describes the advantages of Skid Shipments.

THE STANLEY WORKS
Box Strapping Division
New Britain, Conn.

Faster, Better and Safer Work with Stanley "Eversafe" Strapping



Observe the Simplicity of Our Unit Assembly

An Exclusive Patented Feature—

THIS is the most vital improvement in Jordan Engines in recent years, and made possible by the use of Timken Tapered Roller Bearings which are permanently mounted upon the shaft. As illustrated above, the entire unit, (in one piece) is removed from the Jordan Housing,—a new plug liner slipped in place, and the whole unit slid back into position.

Men Who Know—Recognize This Feature Means Economy

MILL Mechanics who have had an opportunity to study this modern feature, manufactured under our patents, are unanimous in their approval of this construction. They recognize there is a saving of time, which is of vital importance to continuous operation, as well as a very material saving of labor.

When removing the plug, observe, as shown in the illustration, that the packing boxes do not have to be disturbed, but slip out with the unit. The quick seal breakers make it an easy and quick operation to open the Jordan. A perfectly centered plug at all times, means an even wear all the way around the shell liner, which means longer, continuous use, and an uniform product at all times.

Wire or Write To-day for Engineering Data on the Hercules

Atlantic States
Gibbs-Brower Co., Inc.
261 Broadway, N. Y. City

Canada
Watrous, Ltd.
Brantford, Ontario

Pacific States
A. H. Cox & Co., Inc.
Seattle, Washington

THE HERMANN MANUFACTURING CO.

LANCASTER, OHIO

The statement made by L. R. Wilson, vice president and managing director of Abitibi, in regard to the maintenance of the pooling of Canadian tonnage for 1930 and the certainty that dividends on the 6 per cent preferred stock would be earned with a comfortable margin, created widespread attention and interest. The reference to the continuation of the pooling confirms an unofficial report which appeared a few weeks ago. This should assure Abitibi of operations around 80 per cent, and perhaps more, in the current year. The announcement of Mr. Wilson of the 6 per cent preferred dividend being earned in a most satisfactory manner, is very gratifying to all interested in the newsprint industry.

Canada Keeping Its Trained Men

The Technical Service Council and its working in linking up scientifically and technically trained Canadians with the industrial life of the country came in for warm encomiums from Premier Ferguson in a speech before the Toronto Board of Trade last month. "It has done wonders," declared the Premier; "we have practically stopped the emigration of our trained men to the United States. The percentage of such young men who went to the republic to the south of us was twenty-six a little over a year ago. Last year it was only two per cent, practically negligible."

The Technical Service Council is finding positions for technically and scientifically trained Canadians in practically every kind of industry. Last year it found positions for twenty-five of them in pulp and paper plants. The pulp and paper industry is represented on the executive committee of the Council by John Stadler, general manager of the Lake St. John Power and Paper Co., and A. P. Costigane, engineer and secretary of the Ontario Pulp and Paper Makers' Safety Association.

The annual meeting of William Hamilton, Ltd., engineers and manufacturers, Peterborough, was held last month. The same officers and board of directors were re-elected. The president's report was presented and considered. A summarization of the year's activities showed that 1929 was the busiest and most profitable in the 75-year history of the company. In addition to a large volume of business completed in the pulp and paper, mining and hydraulic fields, the plant now contains enough work to necessitate a large amount of overtime for the next five months.

Contract has been let by the Robert Martin Corrugated Paper Box Co. for a new plant to be erected by the company at Peterborough. The building will be one story, 300 by 100 feet, brick and concrete construction. The rate payers of the city recently voted favorably on a by-law granting the company fixed assessment. The cost of the plant will be $50,000, with another $85,000 to be spent on equipment.

A good deal of new equipment is being installed at the mill of the Don Valley Paper Co., of Toronto, just now. The company is replacing one of the steam engines on the drive of the paper machine with an electric motor; it has recently purchased and erected a stack of supercalenders; it is installing a Bird save-all, and it is putting in a new Claflin engine for extra refining.

Hon. Wm. Finlayson, Minister of Lands and Forests for Ontario, has given notice that, at the forthcoming session of the Ontario Legislature, legislation will be introduced which will give his department authority to close sections in Northern Ontario to tourist travel and prospecting activities wherever the bush fire hazard renders such action imperative. Another departmental move toward minimizing timber loss next summer will be the erection, this winter, of twenty-five steel observation towers. A number of them will be constructed in the northwest corner of the province, but the majority will be built to link up the tower chain in the Cochrane district.

This 14-foot diameter rotary digester was built by Biggs for special process operation at the plant of the Sylvia Paper Board Company, Sylvia, N. C. All seams were electrically welded. Test, 225 pounds.

Biggs Welded Rotaries Were Tested Exhaustively

Biggs' usual conservative policy marked the development of welded rotaries for the paper industry. Not until Biggs engineers were thoroughly convinced that Biggs All-welded Rotaries were absolutely uniform, safe, and dependable, was the "Ready, go!" word issued. In this case, more than four years were consumed in painstaking, exhaustive research.

The big rotary pictured above is one of many Biggs All-welded Rotary Digesters now in successful operation. These welded rotaries are especially remarkable because they have put an end to leaks and other difficulties incidental to riveted construction. In fact, they have completely eliminated maintenance expense and trouble formerly encountered in connection with chestnut chip and other special processes.

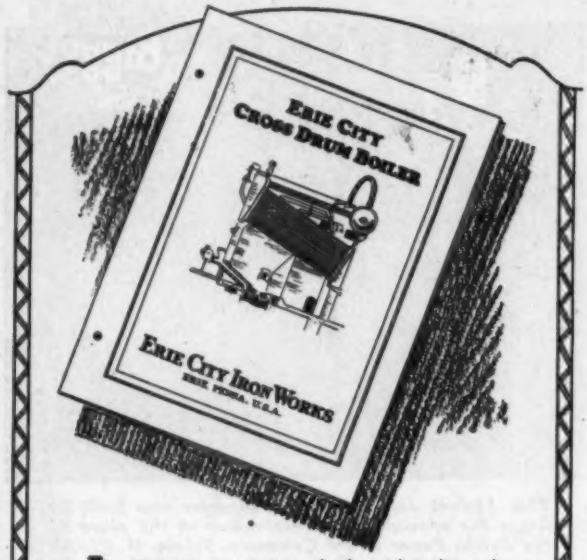
You will get the same service and satisfaction from all Biggs products. Many examples of Biggs' work are shown in our latest folder, "Unusual Steel Plate Construction." There is a copy waiting for you.

"Built by Biggs"
for the Paper Industries

Welded Globe Rotary Digesters
Riveted Globe Rotary Digesters
Cylinder Rotary Bleaching Boilers
Tumbling Digesters, Welded or Riveted
Sulphate and Sulphite Digesters
Penstocks
Welded or Riveted Steel Plate Construction of Every Description

The Biggs Boiler Works Company
East Buchtel and Case Avenues
AKRON, OHIO
NEW YORK - CHICAGO - DETROIT

BIGGS ROTARIES *for years of dependable cooking and bleaching...*



The Erie City Iron Works has developed a new Cross Drum Water Tube Boiler to meet the most exacting headroom conditions. Send for a copy of the above bulletin— SB-13.

ERIE CITY IRON WORKS
ERIE, PA.

Know the merits of the Dart Bronze to Bronze ground seat Unions

Try a free sample

Strength of Malleable Iron in combination with 2 Two Non corrosive seats of bronze

E. M. DART MFG. CO.
Providence, R. I.

Distributors
The Fairbanks Company
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HARDY BRONZE

SCREEN PLATES
ACID RESISTING
VALVES

Wm. A. Hardy & Sons Co.
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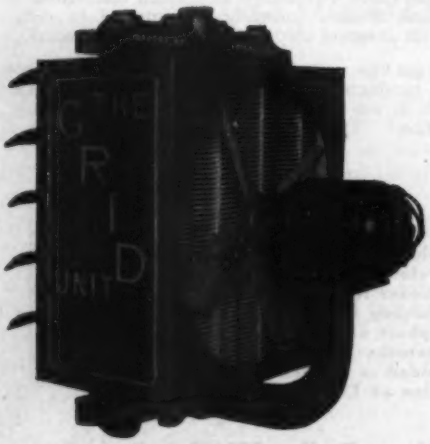
Grid All-Cast Radiation



A Product of the D. J. Murray Mfg. Co.
Wausau, Wis.

A new principle in Unit Heater design.

Great strength in all its features combined with light weight.

Compact — Efficient — Non-corrosive.

Suitable for high or low pressures.

Equally applicable to heating or cooling problems.

Designed for Steam — Water — Brine — Ammonia.

Used not only for Unit Heaters and Coolers, but also for

Blast Radiation
Direct Radiation
Concealed Radiation

Built in a variety of sizes.

Fully tested and guaranteed.

The Unit Heater & Cooler Company

Home Office and Plant
Wausau, Wisconsin

First National Bank Bldg.
Chicago, Illinois

Salmon Tower Bldg.
New York, N. Y.

❖ NEW BRUNSWICK ❖

Inaugurate Dalhousie Mill This Month

Plans are almost complete for the formal inauguration of the new newsprint mill of Canadian International Paper Co., at Dalhousie, which is to take place early in February. This plant is one of the supplementary enterprises in which the Grand Falls hydroelectric power development is the key factor, enterprises which comprise a $40,000,000 program of pulp, paper and power developments in New Brunswick. The plan involved the building of new pulp and paper mills on the Restigouche, Upper Saint John and Miramichi rivers. Power from Grand Falls will operate the plants on the Upper Saint John River and is also being carried by a transmission line 125 miles long across the north of the province to the mills at the south of the Restigouche river on Baie des Chaleurs. Without the Grand Falls power development the construction and operation of these pulp and paper mills would not have been feasible; and at the same time the development at Grand Falls was contingent on the establishment of industrial enterprises of sufficient magnitude to provide a market for a large proportion of the power to be developed.

International Paper's newsprint mill, which will be inaugurated in the presence of a distinguished company, headed by Premier Baxter, will have an initial daily capacity of 250 tons, and is designed for an ultimate capacity of 500 tons. It is the first addition which the company has made to its plants in Canada since the Gatineau mill was completed in 1927; and while it will add to the capacity of Canadian mills at a time when such an addition is hardly welcome in the industry, it must be remembered that plans for the project were made under binding agreements with the New Brunswick Government made long ago.

L. W. Hutchings, recently appointed to take charge of the production of groundwood at the new Dalhousie mill, has taken up his residence in Dalhousie. Previously, Mr. Hutchings was on the staff of the Bathurst Power and Paper Co., at Bathurst. He had gone to Bathurst from the Iroquois Falls mill of the Abitibi Power and Paper Co. Prior to that, he spent five years at the Newfoundland mill of the Anglo-Newfoundland Pulp and Paper Co. He was two years at Iroquois Falls and eight years at the Kenogami mill of Price Bros. and Co. Before leaving Bathurst Mr. Hutchings was tendered a farewell by the employees of the pulp and paper mill and by A. E. MacLean, general manager of the Bathurst Power and Paper Co.

Lawrence Sterns, who had been assistant resident engineer on the construction of the Dalhousie mill, has been in charge of the closing building operations. A. I. Cunningham, who had been resident engineer since the early construction stages, is now located in Montreal, as vice-president and general manager of Merritt, Chapman and Scott, engineers and builders.

John F. Ohlson, who for the past year had been the T.a.p.p.i. American-Scandinavian Fellow at Holmens Bruks A/B, Sweden, has taken a position with the New Brunswick International Paper Co., at Dalhousie.

Fraser Completes Construction Program

It was announced from official sources a few days ago that the Fraser Companies' construction program was now practically completed. The second catalogue paper machine at Madawaska has now come into commercial operation, thereby balancing all departments of the catalogue paper mill and reducing power and manufacturing costs. The complete output of No. 1 catalogue machine, as was announced sometime ago, and part of the output of the No. 2 machine has been sold to Sears-Roebuck. Sale of the balance of production of No. 2 machine has been arranged for.

The Miramichi pulp mill is running at capacity. At Edmundston, the bleached sulphite and groundwood mill are also operating at full capacity. At Madawaska, the com-

DESIGNED BY SPECIALIZED INDUSTRY

Fig. 460

to meet a special need

POWELL All Iron "Pilot" Gate Valves meet the ever growing demand for corrosion resisting valves in pulp and paper mills for handling strong alkaline solutions destructive to other alloys.

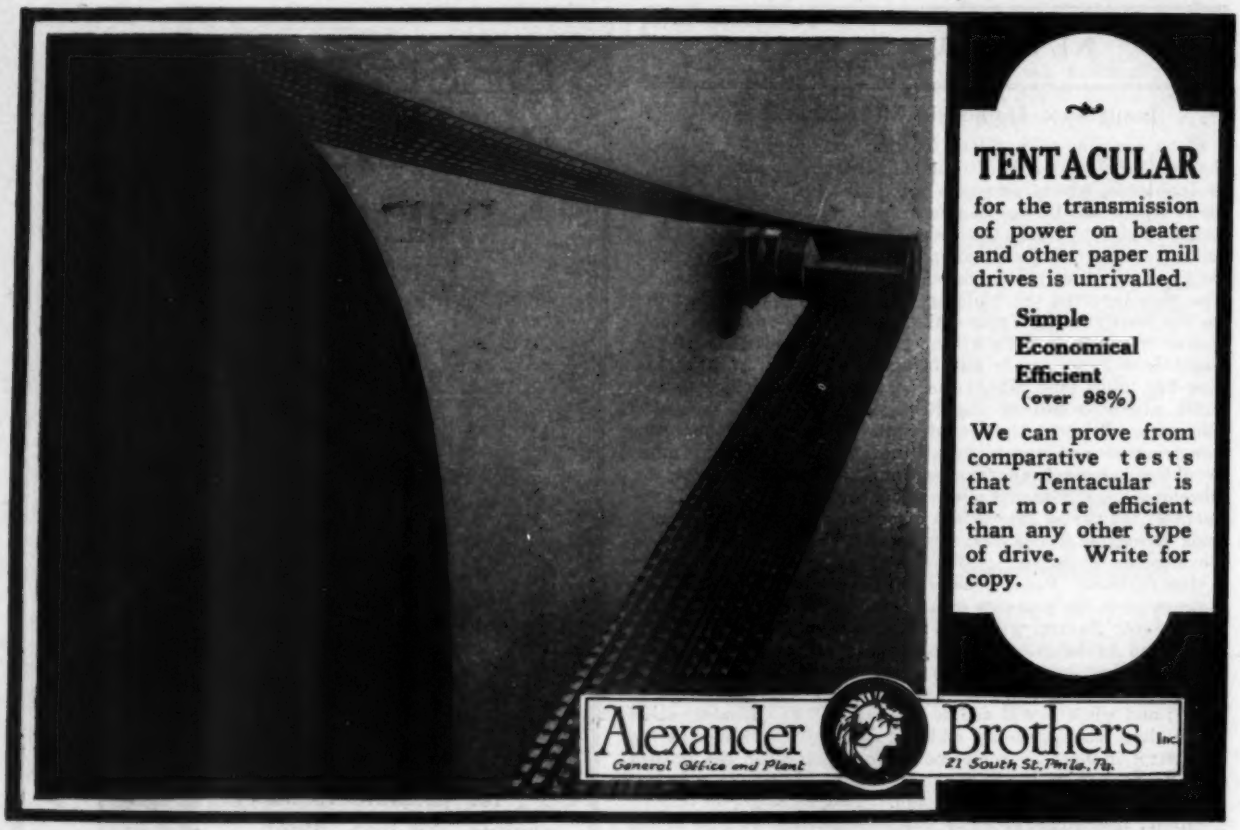
Made in sizes ¼" to 3", for pressure to 125 pounds, All Iron "Pilot" Gate Valves are designed with inside screw stem or outside screw stem and yoke. Stems are threaded full length with standard Acme thread insuring considerably longer life to both bonnet and stem.

Fig. 478

Powell Products include bronze, iron and steel valves, Oilers, Lubricators, Grease Cups, Water and Oil Gauges, etc.

THE WM. POWELL CO.
2521-2531 SPRING GROVE AVE.
CINCINNATI, OHIO

POWELL VALVES



TENTACULAR

for the transmission of power on beater and other paper mill drives is unrivalled.

Simple
Economical
Efficient
(over 98%)

We can prove from comparative tests that Tentacular is far more efficient than any other type of drive. Write for copy.

Alexander Brothers Inc.
General Office and Plant
21 South St. Penlo., Pa.

NOW
is the
TIME
to plan

LAYNE & BOWLER, Inc.
Memphis Tennessee
"World's Largest Water Developers"

Write for bulletins

for
WATER WELLS PUMPS

pany's four fine paper machines are operating to capacity, as is the Madawaska board mill, which is the largest of its kind in operation. The 150-ton bleached sulphite mill which is under construction by Fraser's wholly-owned subsidiary, the Restigouche Co., at Campbellton, is rapidly nearing completion and is expected to be in operation about the middle of February.

Raymond F. Hagadorn, who has been associated with International Paper's Fort Edward, N. Y., mill for the past nine years, the last two as assistant superintendent, has resigned to accept a similar position with the Fraser Companies in their Madawaska mill.

Hammond Atkinson, of Newcastle, is now stationed at the new pulp mill of the Fraser Companies, Athol, near Campbellton, where he has been appointed chief chemist. Previously, Mr. Atkinson was instructor in the Edmundston Vocational School, in which a course in pulp and papermaking is featured.

E. G. M. Cape and Co., of Montreal, who have the contract for the erection of the Fraser pulp mill at Athol, have been engaging additional men to rush the work of construction, and it is expected that the mill will be ready for operation about February 15th.

Circumstances which could be neither foreseen nor prevented, have delayed the construction of the new pulp mills on the Miramichi River, but as matters now stand it is confidently expected that a construction will begin during the course of the next twelve months. International Paper has already acquired the site for a pulp mill, which will probably have a daily capacity of about 100 tons of bleached sulphite, near Chatham; and it was recently announced that the company had purchased a large tract of land for a right-of-way for a new spur to be constructed connecting the proposed mill site with the Canadian National Railways. The mill site proper is now being cleared of pulpwood, which gives every indication of the commencement of building operations on the new mill early in the spring.

The establishment of a pulp mill at St. Leonard, on the Saint John River, is a part of International Paper's Industrial program in New Brunswick.

Definite announcement anent the transfer of the timber areas of the Bonny river and Albert Lumber Companies discloses the purchasers to have been The Mitchell Lumber Co., of Linton, N. B. The tract contains some 30,000,000 board feet of lumber. It had previously been reported on good authority that the purchaser was the Mersey Paper Co., of Nova Scotia. It was further added in the official announcement that the new owners intend to develop the property and are not connected with any interests outside the Province.

❖ NOVA SCOTIA ❖

A new transmission line which is being erected by the Avon River Power and Pulp Co., from Springhill to Oxford, will eventually carry 22,000 volts. For this winter, however, only 2,200 volts will be carried over the new line. Indications are that the extension will be completed before long, as a large crew of men are at work on the line.

Mersey Paper Co. Financing

As had long been anticipated, the Royal Securities Corporation, Montreal, has at length begun the process of financing the Mersey Paper Co. by offering $2,000,000 six per cent, 20-year, general mortgage sinking fund gold bonds, Series A, at 95 and accrued interest, with a bonus of five shares of common stock with each $1,000 bond.

Col. C. H. L. Jones, president and general manager of the Mersey Paper Co., makes a long statement regarding the company, the chief item of which is that 80 per cent of the present capacity of the mill has been sold on a five-year

RYERSON

Immediate Shipment from Stock

Bars, Shapes, Structurals, Rails, Plates, Sheets, Rivets, Bolts, Nails, Wire, Chain, Turnbuckles, Shafting, Boiler Tubes, Boiler Fittings, Corrugated Sheets, Concrete Reinforcing, Welding Rods, Babbitt Metal, Tool Steel, Bar Iron, Refined Iron, Floor Plates, Safety Treads, Small Tools, Machine Tools, etc.

Write for the Journal and Stock List—the "key" to Immediate Steel.

JOSEPH T. RYERSON & SON INC.

Chicago Milwaukee St. Louis Cincinnati Detroit
Cleveland Buffalo Jersey City Philadelphia Boston

STEEL

Simonds Circular Paper Slitters

Edge-holding—that explains why mills in every section are turning to SIMONDS for the Circular Slitters that give them better work and more production. Simonds Slitters are true to form and perfect mechanically.

Order them from any Simonds factory or service station.

Simonds Saw and Steel Company

ESTABLISHED 1832—FITCHBURG, MASS.

Chicago, Ill. Boston, Mass. Detroit, Mich. New York City
New Orleans, La. Memphis, Tenn. Atlanta, Ga. Portland, Ore.
San Francisco, Cal. Los Angeles, Cal. Seattle, Wash. Montreal, Que.
Toronto, Ont. Vancouver, B. C. St. John, N. B.

NOW

a complete Stock of Texrope Drives

AT CHAMBERSBURG PA.

Texrope is an excellent drive in textile plants because starting is smooth with no lost motion to take up. Texrope does not overheat.

On fans and blowers the silent feature of Texrope Drives wins favor, especially on ventilating systems.

On pumps and compressors the short-center feature of Texrope Drives is important.

T. B. Wood's Sons Company has been appointed by Allis-Chalmers Manufacturing Company as licensed manufacturers of and special distributors for TEXROPE Drives. A large and complete stock of standard sheaves and belts is carried now at Chambersburg, Pa., ready for immediate shipment.

In addition to this complete stock, sheaves for special drives will be made to order by T. B. Wood's Sons Company and will conform to Allis-Chalmers' standards of design and quality.

With seventy-three years' experience in manufacturing Power Transmission Machinery, this company is in a position to render a complete engineering and manufacturing service in connection with TEXROPE Drives.

Complete information is given in Bulletin No. 1228-J. May we send you a copy?

T. B. WOOD'S SONS COMPANY

Manufacturing Engineers

CHAMBERSBURG, PENNSYLVANIA

Licensed Manufacturer of

ALLIS-CHALMERS

TEXROPE DRIVES

Shafting Hangers Couplings Rope Drives Friction Clutches Flexible Couplings Pulleys Pillow Blocks Belt Contactors Speed Reducers Conveyors Ball Bearings

contract. He does not mention the price to be received, which is commonly supposed to be $3 less than the Canadian price for newsprint during 1929. The present capacity of the mill is stated to be 250 tons daily, and it is understood that another machine is to be installed in the near future.

❖ BRITISH COLUMBIA ❖

Poplar Island Project Abandoned

Decision to abandon the Poplar Island pulp mill project was recently announced in New Westminster. This decision was read to the New Westminster City Council by Mayor Wells Gray in a letter from Senator Chas. G. Heifner of Seattle, who has worked long and earnestly on this project. The Poplar Island mill would have adjoined New Westminster, and to facilitate the project the city had secured an option on the property from the government.

In his letter, Senator Heifner said he abandoned the project with profound regret, but had been forced to do so as he could not get it financed. He expressed appreciation of the co-operation he had received in New Westminster in his efforts.

Progress is being made towards the establishment of the pulp mill project at Terrace. C. R. Gilbert, local representative at Terrace, has received word from the Toronto promoters that if the owners of the property at Terrace, which is under option, will consider time payments instead of cash, the eastern men will proceed with their plans for the establishment of a lumber plant and pulp mill.

Bond Issue Guaranteed by City

The by-law which was voted upon by the citizens of New Westminster, whereby the city guarantees a $300,000 bond issue of the Westminster Paper Mills, Ltd., was carried by a very large majority. The company's plant was wiped out by fire last July, and the remaining assets, amounting to $458,000, were insufficient to reconstruct the plant. Old customers of the mill signified their intention of remaining with the firm, and a larger plant was needed to take care of the increasing business.

A crew of 55 men is rushing work on the new first unit of the plant. Tracks will probably be laid this spring to connect up with the Canadian National Railway right-of-way, which passes the plant site, and this will provide convenient facilities for export shipment.

Orders for the various grades of paper and paper products of the firm are coming in rapidly, and when the plant is ready for work in March, it is anticipated that orders on hand will keep it working to capacity for a considerable time. The company's products comprise kraft and sulphite wrapping paper, oiled vegetable and fruit wraps, tissues, towels and other specialties.

❖ MANITOBA ❖

Seventy-three million cords of pulpwood are involved in the transfer of natural resources by the Federal Government to the Province of Manitoba. In addition, there are estimated to be 5,300,000 horsepower of water power and 123,000,000 acres of land in the province that now become the property of Manitoba as a result of the transaction, in addition to mining prospects of incalculable value.

The Manitoba Paper Co. is still waiting for action on its request for more pulpwood limits. After surveys of the limits previously mapped out for the company, it was found that there was a considerable shortage in the wood that was required by the company. In the meantime, the Manitoba Government and the Dominion Government are working on the return of the natural resources to the province.

Are you from Missouri?

A large paper mill put in two Warren Stuff Pumps on *trial* . . . "Show us," they said . . . now 145 are in daily operation in the mills operated by this company. Seventeen of the larger paper makers who have tried Warren centrifugal stock and water pumps have consistently placed repeat orders until their total now stands at 564 pumps.

Put in many mills on trial, Warren centrifugal stuff pumps move light or heavy stock smoothly, efficiently, without clogging . . . have proved to the complete satisfaction of all interested that they can do what other centrifugals have failed to do.

Are you from Missouri?

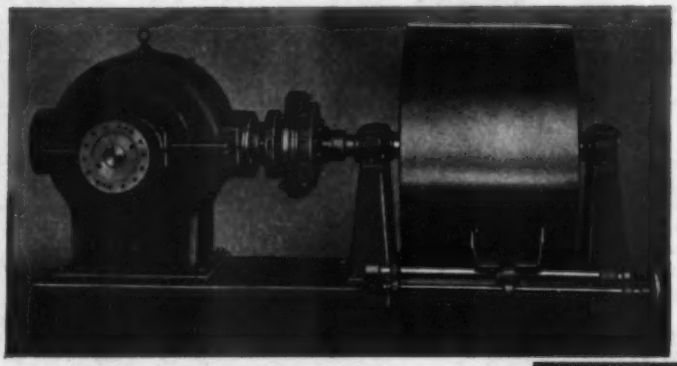
Warren Stuff Pump, built to handle 6% clean stock smoothly, efficiently and without clogging

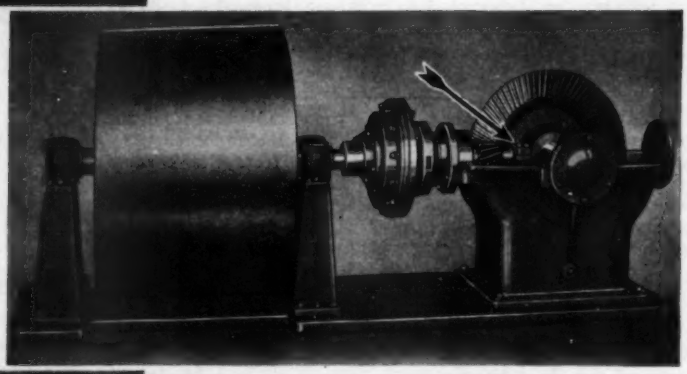
Warren Steam Pump Company Inc. — Warren Massachusetts

Agencies in all principal cities.

3669

HORNE Paper Mills Drives



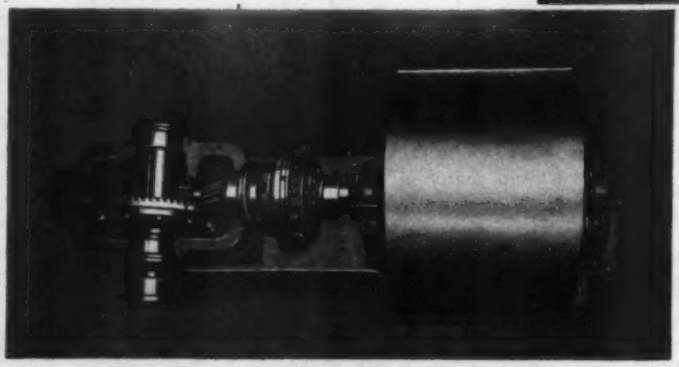


Ball bearing each side of the cone.

Ball bearing each side of pinion,—see arrow.

Cone keyed tight to cone shaft.

Clutch entirely separate from cone.



J. H. HORNE & Sons Co.

ESTABLISHED 1864

LAWRENCE, MASS. U.S.A.

PAPER MILL MACHINERY

FOURDRINIER PAPER MACHINES — CONVENTIONAL TYPE AND REMOVABLE FOURDRINIERS — CYLINDER PAPER AND BOARD MACHINES — BEATING ENGINES (HORNE patent and HOLLANDER) STANDARD AND HIGH SPEED TYPES — WASHING ENGINES — JORDAN ENGINES, Pulley and Motor driven, equipped with anti-friction bearings, if desired — SINGLE AND DUPLEX PAPER AND BOARD CUTTERS

WISCONSIN

Further Reports Show Satisfactory Year

Wisconsin, as a whole, had a very satisfactory year in the paper industry in 1929, according to reports submitted at various annual meetings during the last month. Most mills report a good volume of orders booked ahead, and normal production assured. No reaction has been felt because of the recent stock market crash, and no slump is anticipated. Mills are entertaining the hope that there will be no reduction in paper prices because no "profitless prosperity" is wanted.

Orders were just as heavy in January as a year ago, and operations have been going on at normal capacity at the Fox River Paper Co., Appleton, according to William C. Wing, president. Considerable improvement has been made in the equipment of the mill, and still further modernizing of equipment will take place this year.

Net earnings of the Kimberly-Clark Corporation, Neenah, were much in excess of the previous year. They totaled more than $3,600,000 for 1929, after allowing for charges and taxes, as compared to $2,754,663 in 1928. The common stock earned $6.00 a share as against $4.39 the previous year, after deducting dividends on preferred stock. The fourth quarter of 1929 showed $1.80 a share, compared with $1.62 the previous year. F. J. Sensenbrenner, president, declares the outlook for 1930 is very satisfactory.

The 1930 volume of the Tuttle Press Co., Appleton, will exceed that of 1929 in the opinion of R. H. Purdy, general manager. Present operations are above normal and orders are booked far ahead of last year.

With its building program and machinery alterations almost entirely completed, the Consolidated Water Power and Paper Co., Wisconsin Rapids, expects to have a larger production this year and a good sales volume. A market already has been developed for the groundwood book papers which were made for the first time in 1929. Reports submitted at the annual meeting showed that the year 1929 was very satisfactory, despite the interruptions of rebuilding the main mill. All of the directors were re-elected, including George W. Mead, president, and R. L. Kraus, Theodore W. Brazeau, Stanton W. Mead, F. P. Hixon, W. D. Fowler and E. B. Redford.

Attempts made about a year ago to place operations of the Badger Paper Mills, Inc., Peshtigo, Wis., on a permanent and profitable basis are meeting with success, according to a summary of the business presented at the first annual meeting of the corporation. The mill was bought at auction from the Peshtigo Paper Co., and was started Feb. 1, 1929, on the manufacture of glassine and other specialties. Operations are now on a profitable basis and a satisfactory volume of advance orders is on the books. The company is employing 200 persons. E. A. Meyer is president of the corporation.

Conditions also are excellent at the Nekoosa-Edwards Paper Co., of Nekoosa and Port Edwards, the annual reports indicated. The company is now prepared to make kraft papers on a larger scale than ever, with the prospect of obtaining all its pulpwood in the future from its own forests. The officers and directors were re-elected.

A dividend of six per cent was declared at the annual meeting by the Grode & Nash Paper Company, general paper merchants, Nekoosa. The company enjoyed a satisfactory volume of business in 1929 and is optimistic about the future. The officers and directors were re-elected.

Orders amounting to about $1,000,000 are being released to paper mills of the Fox River Valley through a decision of the United States circuit court of appeals, Chicago, favoring the Milprint Products Corporation, Milwaukee, Wis., in its controversy with the Shellmar Products Co., Chicago, over a food display package license. The Milwaukee Printing Co., a subsidiary of the Milprint Company, purchased the license from Allen-Qualley Co., of St. Paul, Minn. The license covered a package with a combination of transparent cello-

The Span of Life

—of ALL felts is necessarily short, but—Orr Felts have a span of life a few days longer than others—and this by actual test.

Figure the saving due to a few days' longer service out of each felt—apply it over a year's run and you will easily see what such a saving can mean to any mill.

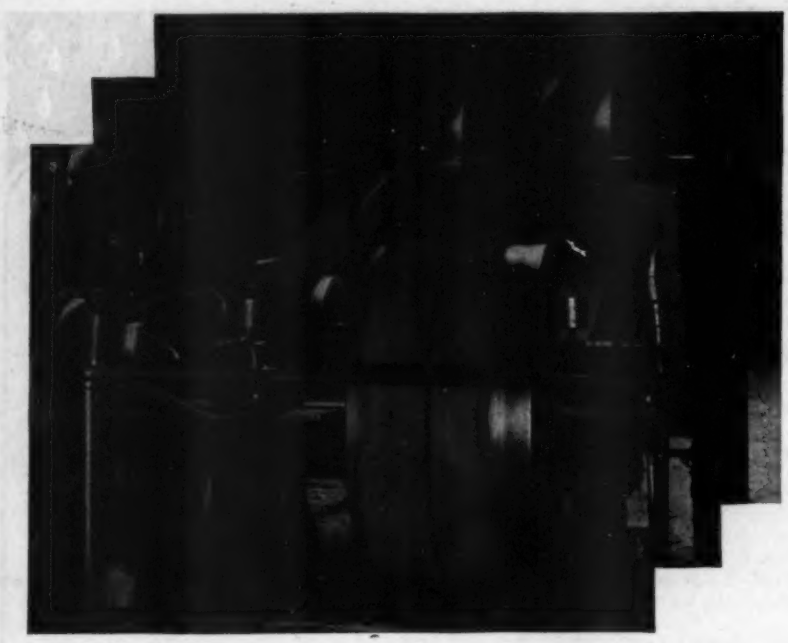
Orr felts not only last longer, but remove water faster, regardless of speed travel, and reduce broke by delivering a stronger sheet to the dryers.

In short, Orr Felts will help you to secure greater tonnage and better quality at less cost and greater profits.

Orr Felts are made in all textures for every requirement

The Orr Felt & Blanket Co.
Piqua, Ohio

ORR FELTS



Two 14' 8 ply Pacemaker Belts driving two Jordan Engines at the Cherry-Burrell Co., Paper Mill, Tama, Iowa. This mill is completely equipped with Pacemaker.

Pacemaker Belts

deliver maximum horsepower

Pacemaker is a quality belt built for heavy duty work, and is in general use in paper, pulp, lumber, and cement mills or wherever heavy, hard and fast drives are common. It can be depended upon to deliver the maximum horsepower.

A highly efficient service at low cost is making Pacemaker a favorite.

Another Record of Performance

The Cincinnati Rubber Manufacturing Co.

CINCINNATI OHIO

phane and non-transparent paper, used principally for wrapping meats, candy bars and other food products. The suit was based on an alleged breach of contract on the part of the Shellmar Company and had been in the federal courts for more than two years.

One-day Rest Law to Be Enforced

Statewide enforcement of the law requiring one day of rest in seven for paper mill employees will be demanded hereafter by the Wisconsin Industrial Commission following a conference with paper mill executives held last month at Appleton. Mills have been co-operating with the commission through a special committee made up of employers and labor officials, in an attempt to work out a plan of enforcement that would not be a hardship on the industry. The Appleton conference was held so as to check up on the enforcement methods used, ascertain if there were still problems to solve, and whether conditions were such that the commission could insist upon full observance from now on.

The Kimberly-Clark Corporation had been the most successful in operating under the rest law, the commission reported. Methods used at the Northern Paper Mills were explained by W. J. Peacock, personnel director, and the system at the Thilmany Pulp and Paper Company by W. F. Ashe, personnel director. It was shown that repair work often done on Sundays could be handled on week days just as well. Mills also proved that the working schedules could be so arranged that each employee would have one full day of rest out of seven.

Employees rather than employers made enforcement of the law difficult, F. M. Wilcox, chairman of the commission said, because they want the extra money. Large placards will be placed in the mills to inform workers that the mill is required to obey the law. The law permits three hours' employment on Sundays where necessary for repairs.

One question referred back to the advisory committee is that of defining what would be considered an emergency, since mills are permitted to work on Sundays in emergency cases. Mill representatives on this committee are: D. C. Everest, vice president, Marathon Paper Mills Co.; S. F. Shattuck, vice president, Kimberly-Clark Corporation; F. H. Rosebush, Nekoosa-Edwards Paper Co.; Walter L. Mead, Consolidated Water Power and Paper Co.; W. J. Peacock, Northern Paper Mills; J. H. Miller, Whiting-Plover Paper Co., and W. F. Ashe, Thilmany Pulp and Paper Company.

Operations were resumed late in January at the Union Bag and Paper Company's mill at Kaukauna. One machine was started up and about 45 members of the former crew resumed employment. The company shut the mill down about July 1st, when the bag department was moved elsewhere, but decided to start production again. R. A. Jacoby, resident manager, is in charge.

Wisconsin's governor, Walter J. Kohler, is back of a movement to have President Herbert Hoover push plans for construction of a $900,000 building for the United States Forest Products Laboratory, Madison, Wis. The State has offered the necessary land at the University of Wisconsin campus. The original laboratory was built at state expense but is maintained by the Government with a staff of 400 persons.

A total of 20,000,000 feet of pulpwood is being cut this winter in Sawyer county, Wisconsin, by the Dells Paper and Pulp Co., Eau Claire. The Northern Pulp Wood Co. is cutting about 50,000 cords of pulpwood from stumpage left by the Hines Lumber Co. About 60 per cent of the cut is hemlock.

One fatal accident occurred during the last month when Boyd W. Frakes suffered a skull fracture and crushed chest in a 25-foot fall at the carton plant under construction by the Marathon Paper Mills Co., Menasha, Wis. He was employed by the Dowd Concrete Co., contractors.

An enlarged capacity in the pulp department will be provided the Combined Locks Paper Company, Appleton, Wis.,

Make the most of your machines!

WIDER and faster machines are making it possible for paper makers to increase their output and add to their profit.

But wider and faster machines, if they are to turn out their full quota of paper, demand strong and dependable wires.

Paper makers are demanding wires which stand up under rigorous service—which are durable and dependable—they are adopting Tyler Fourdrinier Wires to assure continuous production and flawless paper.

Tyler wires are the quality wires of paper making. Try a Tyler wire on one of your machines.

TYLER WIRES

for screening WOOD CHIPS

HUM-MER *Electric* SCREEN

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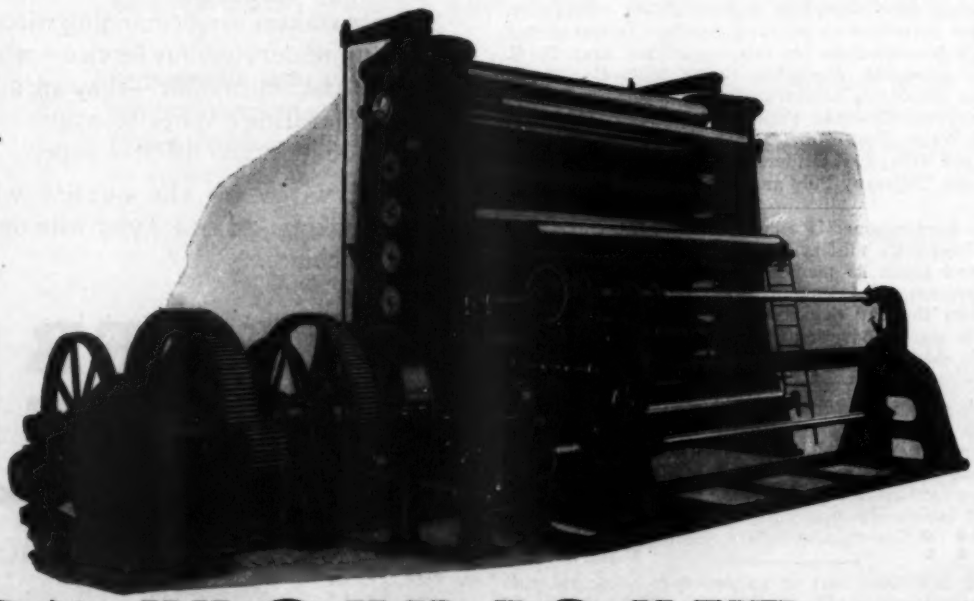
SUPER CALENDERS *and* Experience

Experience does not come over night,—not in the designing and building of Super Calenders. It is the result of long years of intimate study of the daily dozens of difficulties to be overcome in the Paper Industry. For 65 years the HOLYOKE MACHINE COMPANY has built Quality and Superior Performance into every HOLYOKE MACHINE. When planning purchases of equipment consult with HOLYOKE Engineers, Holyoke Machine Co., Holyoke, Mass.

Manufacturers of Super Calenders, Platers, Cotton and Paper Rolls, Washing and Beating Engines, Wood Pulp Grinders, Barkers, Chippers, Rag and Paper Dusters, Rag Cutters, Hydraulic Pumps and Presses, Hercules Water Wheels and Governors.



The HOLYOKE MACHINE COMPANY

FOUNDED 1863

through construction of a new grinder unit at its mill at Combined Locks, Wis. Two 3-pocket grinders are to be installed, as well as a 600 hp. motor for each. These will be housed in a building 35 by 60 feet in size, of concrete and brick. The building will be located between the old grinder plant and the wet machine room. There will be an increase of 20 tons a day in the production of groundwood mechanical pulp. O'Keefe-Orbison Engineering and Construction Co., Appleton, designed the new unit.

Consolidated Closes Year without Fatal Accident

Safety efforts of the Consolidated Water Power and Paper Co., Wisconsin Rapids, brought a signal reward when the year 1929 was completed without a fatal accident, and the best record otherwise ever held by the company. Serious accidents have happened in the past and the company therefore is elated over its record. October was a perfect month, with no lost time accidents among 1,250 employees. There were plenty of hazards, including extensive building operations.

Education along safety lines continues to be a major activity of mills everywhere this winter. Eight meetings are being held at Green Bay, with prominent speakers including Dr. Ernest Corn, of the National Safety Council, Chicago. Safety meetings also are being held at Appleton, Wis., with a possibility that city-wide sessions will be held to stress traffic and community safety.

Nepco lake, which came into being recently when the Nekoosa-Edwards Paper Co., Nekoosa, Wis., built a new dam, is being stocked with 64,500 Rainbow trout from the company's own fish hatchery. This artificial lake has become quite a recreation place for the mill employees.

Reforestation in Wisconsin will be aided by a bill now in congress. It provides $75,000 annually for forestry activities in five northern counties. Ten to fifteen thousand acres of denuded lands will be planted with trees, and the remaining money will be used for local labor on these projects.

The Interstate Commerce Commission has been asked by paper mills of Wisconsin to refrain from re-opening the "Minnesota and Ontario" and the "Fox River Valley" rate fixing cases, since it is felt that the present freight rates are just and adequate. Western railroads wanted the situation aired again because they claim paper rates are not based on value as is true with other commodities.

A fire loss of $1,000 occurred at the Fox River Paper Company, Appleton, the second within a few months. The fire started in housing around steam pipes and considerable stock was damaged by water used to extinguish the blaze.

Ten weeks' classes in papermaking will be held at the vocational school at Menasha, Wis., with A. W. Bouffard in charge. Raw materials used in paper manufacture will be studied first, and paper testing then will be taken up. Classes also will be organized in the Wisconsin River Valley and at Rhinelander and Eau Claire. Louis J. McNamara, who resigned recently from the Kimberly-Clark Corporation, will be in charge.

Trade-marks of "Sani-Lux" and "Healthtex" have been adopted by the Wisconsin Tissue Mills, Menasha, to designate their lines of towels, napkins and toilet paper. Patents have been granted.

H. G. Golladay has resigned from the engineering staff of the Kimberly-Clark Corporation, Neenah, and has been added to the staff of the Consolidated Water Power and Paper Co., Wisconsin Rapids.

Taking advantage of favorable weather, construction work on the new Marathon Paper Company building at Menasha was rushed so that the factory may be able to put in operation sometime in February. At last reports, the glass

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Variable Speed
TRANSMISSION
in the
DRIER FIELD

Yarn driers
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Enamel driers
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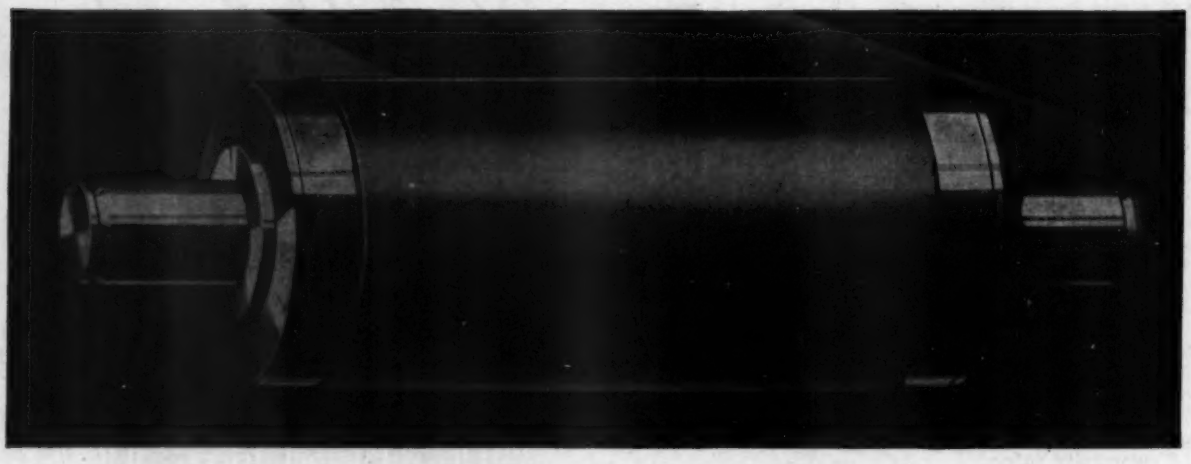

No Calender can be better than the rolls in it

The outstanding finishing quality of Perkins Calender Rolls is the result of constant application to the problem of the paper industry since 1873.

Perkins Calender Rolls are uniform, resilient, resistant and have superior finishing qualities and they stand heat better and wear longer. They are the result of the longest experience in this highly specialized field of manufacture.

Take advantage of Perkins' long association in the industry.

B. F. Perkins & Son, Inc., Holyoke, Mass.

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Cotton Rolls
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Embossing Calenders
Sheet Calenders
Platers
Mullen Paper Testers
Tensile Testers
Ventilating Fans
Rag Cutters
Stock Cutters
Paper Dampeners
Bleach Ejectors

frame work on the south side of the new edifice was in position and the walls were rapidly nearing completion. The company is employing all the workmen that it can use to advantage.

Ernest G. Timme, formerly superintendent of the Fox River Paper Co., died during the latter part of January at Appleton. He was superintendent of mills in New Hampshire previous to that time.

E. A. Gooding, 69, president of the Wisconsin Paper Box Company died at his home in Wausau a short time ago. Mr. Gooding was well-known in Wisconsin lumber circles.

Articles of organization were recently filed by the Woelz Brothers Company, Appleton, who will engage in the wholesale paper dealing business. The papers indicate the company will have 1,000 shares of common stock of no par value. Signers of the articles of organization are Fred W. Woelz, George W. Woelz and M. K. Woelz.

George E. McKowen, secretary, Hummel & Downing Co., of Milwaukee, in commenting on 1929, states that conditions in the fiber or paperboard industry during the year exceeded expectations, even in the face of a rather dismal outlook during the early part of the year.

The industry in general is overproduced by reason of increased facilities. This overproduction, however, is being gradually absorbed through intensive sales campaigns in extending the used into new fields heretofore not considered logical outlets for paper or fiber made goods, so that 1930 is approached with considerable enthusiasm and confidence. Mills and factories are working full time, commitments and obligations extending well into next year virtually assuring little idle time in this institution for sometime at least.

❖ OHIO ❖

Superintendents Hold Dinner Meeting

The Miami Valley Division of The American Pulp and Paper Mill Superintendents Association held a dinner meeting at the Hotel Manchester, Middletown, Ohio, on Saturday, January 11, with forty-four in attendance.

After calling the meeting to order Mr. Randall, chairman, asked Wilson Galloway, past chairman, if he would not say a few words since he had been absent from three consecutive meetings.

Mr. Galloway, in his remarks, told of a fire at the Hagar Strawboard & Paper Company on November 21, in which about four hundred tons of straw was destroyed. The origin of the fire is still a mystery.

The town of Cedarville, Ohio, where the mill is located does not have a waterworks and consequently is not prepared to combat fires such as this one. However, the Hagar mill has the distinction of being the first mill in the State of Ohio to have a gasoline engine fire pump which was installed just a year before in November. The capacity is 1,000 gallons per minute, four cylinder, twin ignition. They had wondered how it would perform in such an emergency and found it to do exceptionally well. Six full streams were on for forty hours and four were on for the next forty hours, the pump working eighty hours continuously.

Mr. R. L. Eminger, National Secretary, introduced two new members in this Division, Ray Gleason of the Franklin Board & Paper Company and David Patrick of the Cheney Pulp and Paper Company, both located in Franklin, Ohio.

The Vertical Hydrator

P. E. Hodgdon of The Vertical Hydrator Company, Chicago, read a paper entitled "Beating and the Vertical Hydrator" which will appear in a later issue. After reading his paper, Mr. Hodgdon answered the following questions:

Q.—What kind of metal is the hydrator made of? A.—Bronze and iron.

SIGNODE System of Steel Strapping best for Paper Shipments—

Leading paper mills are using the Signode system of tensional steel strapping for all paper shipments.

More paper is safely moving on Signode strapped skids while even the most difficult Signode box shipments are also coming through safely.

Write for Bulletin on Signode for the Paper Mills.

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2608 N. Western Ave., Chicago, Ill., U. S. A.
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Offices in Principal Cities

SIGNODE
The Sealed Steel Strapping

We also furnish round wire tensional reinforcements, all forms of nailed-on strapping, automatic wire tying machines, pail clasps, clutch nails, tag fasteners, etc. Write for general catalog.

It is much *easier* with a BARRETT LIFT TRUCK

Write for the Red Head Bulletin No. 120

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BARRETT-CRAVENS CO.
3262 W. 30th Street, Chicago, Illinois

Morey Paper Mill Supply Co.

Vulcan TRADE MARK

38 CHAUNCY St. BOSTON, MASS.

Sole Selling Agents

"LAMBETH" COTTON TRANSMISSION ROPE
and EGYPTIAN COTTON ROPE FOR SHEAHAN CARRIERS
Careful, Intelligent, Quick Service

Separate air and water units
save power

THE Jennings Flat Box Pump does away with the practice of using one pump in which air and water are drawn in and discharged together.

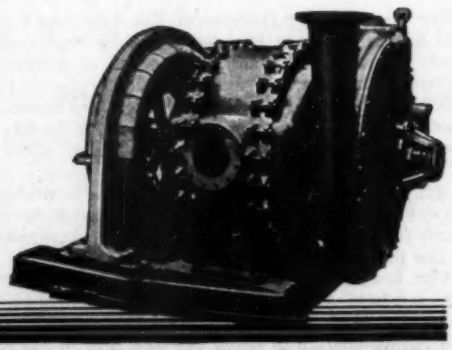
By combining in one casing a Nash vacuum pump, designed for air, and a Jennings centrifugal pump designed for water, high efficiency and low operating costs are assured. For air is discharged direct to atmosphere against no back pressure.

And no extra power is required to maintain a uniform vacuum regardless of the amount of water the pump is handling.

For creating a vacuum on flat boxes of Fourdrinier and cylinder machines the Jennings Flat Box Pump can be relied on to give long, trouble-free service.

JENNINGS
FLAT BOX PUMP

Capacities from 150 to 5000 g.p.m. of water together with 80 to 2300 cu. ft. per min. of air at 10 in. vacuum.



Jennings Pumps

THE NASH ENGINEERING CO. 161 WILSON ROAD SOUTH NORWALK, CONN.

THE JOHNSON FRICTION CLUTCH

IMPROVEMENTS

JOHNSON—
FRICTION CLUTCH

IMPROVEMENT NO. 1

★

CHROME NICKEL STEEL FINGERS★ NOW USED instead of Carbon Steel Drop-Forged Fingers.

RECENTLY MADE IN THE

CHROME NICKEL STEEL FINGERS, are TOUGH, they WEAR and WEAR and WEAR, without BREAKAGE.

WIRE, PHONE OR WRITE FOR CATALOG "PI-2"

THE CARLYLE JOHNSON MACHINE CO. MANCHESTER CONN.

Q.—Is it much trouble to change the sections? A.—Each individual section is very easily removable.

Q.—What speed does the machine run at? A.—Three hundred.

Q.—Does the stock heat up? A.—Not at all.

Q.—What would happen if you put a valve on the discharge? A.—It would improve the work done. We have done that.

Q.—How big are the channels in the rotors? A.—About ½ inch wide, ⅛ inch deep.

Q.—Does the height of the discharge on this machine affect the hydration of the stock at all? A.—Somewhat.

Q.—On kraft pulp, how many 2,000 lb. high speed beaters would you figure this hydrator would be equal to? A.—About four.

Q.—How does stock that has been run through the hydrator compare in freeness with ordinary beaters? A—About the same, but with a longer fiber.

The next meeting of the Association will be held February 22, at the Hamilton Inn, Franklin, Ohio.

Container and Box Companies Merge

Consolidation of Gardner-Harvey Container Company, Middletown and the Inland Box Corp., Indianapolis, was recently announced. The new company will be known as the Inland Container Corporation.

It is the plan of the new corporation to increase its facilities for serving nearby markets of Ohio. By consolidation with the Inland Box Corp., it increases its facilities and gains not only the expert management and personnel of one of the leading container manufacturing companies of the country, but also brings under single control two of the most modern corrugating plants.

The Gardner division of this consolidation has one of the most modern container plants in the United States and Canada. The plant facilities at both Middletown and Indianapolis are of the latest fireproof, daylight construction. The merger makes the Gardner division a party of one of the largest container manufacturers of the country. Offices are maintained in New York and all the principal cities.

Officers of the company are: H. C. Krannert, president and treasurer; E. T. Gardner, vice president; C. A. Behringer, secretary; M. S. Johnston, assistant treasurer; G. E. Bomberger, production manager.

Capitalization of the company will be $2,500,000.

Crystal Tissue Holds Convention

Discussion of marketing problems with the salesmen of the Crystal Tissue Paper Company in a three-day convention of the firm proved an appropriate way for the firm to observe its thirtieth birthday. This was the first sales convention the company has ever had, all of its representatives of the United States from coast to coast being brought into the meeting. Historical sketches mingled with practical problems which the company meets daily, the theme of improving the company's standards and extending its market, being brought out in the three-day program.

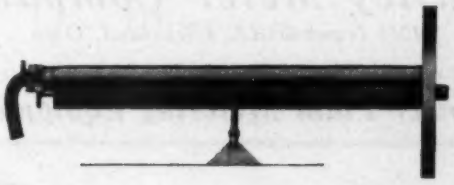
To insure its employees double coverage group insurance, the Crystal Tissue Paper Company has entered into a contract with the Metropolitan Life Insurance company for that purpose. The plan consists of more than $250,000 life insurance, supplemented by the payment of weekly sick and accident benefits. Under the co-operative clause premiums will be paid jointly by the employer and employee.

Officers of the Sorg-Oglesby-Smith Paper Company, Middletown, were elected recently as follows: J. A. Aull, president; M. T. Hartley, A. F. Smith, and L. C. Anderson, vice presidents; D. G. Driscoll, secretary; H. C. Johnson, treasurer; C. E. Aull, assistant secretary; L. H. Ritz, assistant treasurer.

Removal of the Middletown plant of the Nashua Gummed & Coated Paper Company from Middletown to headquarters of the company at Nashua, N. H., starts this month. The move was made to effect a more efficient production of the

SCOFIELD FELT CONDITIONER

The Scofield Felt Conditioner is a device designed to meet the needs of the paper industry. It is the result of years of concentrated study of the requirements. Its performance is guaranteed.



A dirty felt is a liability; a clean felt is an asset.

With the Scofield Conditioner you can keep your felts clean continuously. Dirty streaks and spots can be removed quickly and efficiently.

Many mills are using this method of felt conditioning. It is being used on machines making all grades of paper from tissues to boxboard.

Give us an opportunity to review your felt trouble.

We will gladly send you complete particulars upon request.

GILBERT J. SCOFIELD COMPANY, INC.

408 No. Pearl St.
ALBANY, N. Y.

PAPER MILLS FOR SALE

At AUSTIN, PENNA.—The Bayless Mfg. Corp.'s complete, up-to-date Paper Mill at fraction of its actual value.

At CHEBOYGAN, MICHIGAN, the Paper Mill of the Union Bag and Paper Corp., at a very low price. Exceptional water power contract offered by the Michigan Power Co.

At BUCK RUN, PENNA.—The Coatsville Paper Mills, Inc. 86" trim three cylinder machine. Good specialty mill, ready to operate.

For further particulars address

GIBBS-BROWER COMPANY, Inc.
Paper and Pulp Mill Brokers
261 Broadway, New York City
OUR MOTTO—"Service First"

WANTED—One duster for old paper stock to handle 100 tons mixed per day. Address Box 174, The Paper Industry.

It Pays to Advertise Opportunities in this Opportunity Section

Bailey Meter Company
1058 Ivanhoe Rd., Cleveland, Ohio
Specializing in
Power Plant Metering Equipment

STEEL PLATE CONSTRUCTION
Riveted and Welded
Specialists in PAPER DIGESTERS and Heavy Plate Work
RITER-CONLEY COMPANY
Pittsburgh, Pa.

Double Capacity
Less Jordaning - - Less Power!

Here is Dayton Beater's record at National Folding Box Co., New Haven, Conn.: First order—1 Dayton Beater; six months later, 3 more Daytons! Doubled their beating capacity with 30% less power per ton; cut their jordaning with a 25% saving in jordan power. .....Satisfactory? Certainly! And we can do as much for your mill. Ask us.

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DAYTON
High Speed Beaters

Lessons in Paper Making
***By* Harry Williamson**

One of the greatest funds of information on paper making ever published for the mill man.

Part I contains the first twelve lessons and two separate articles—A Problem in Head Box Control and The Degree of Hydration.

Part II contains fourteen lessons and one separate article—Safety Practice in Machine Room. Price 50¢ each.

Practical Helps for the Mill Men

A 48-page pamphlet made up of practical helps, many of which have meant considerable savings in paper and pulp mills. Of tremendous value to the practical man. Price 50c.

THE PAPER INDUSTRY
356 Monadnock Bldg., CHICAGO, ILL.

company's product from one point of operation. The local plant of the company, which manufacturers gum and boxboard paper, has been located in Middletown for 16 years. R. A. Brown, manager of the branch, will return east with the firm.

Champion Coated Paper Co. to Install Electric Drives

The Champion Coated Paper Company of Hamilton, Ohio, will electrify ten of its paper machine drives, having placed with the Westinghouse Electric and Manufacturing Company an order for ten single motor paper machine drives, each complete with automatic control and a carbon pile automatic speed regulator, to replace the steam drives now in use.

Each drive includes one 220 hp., type SK, d-c. motor; a 175 kw. motor generator set consisting of a synchronous motor, a d-c. generator, and an exciter; and control equipment including a control panel for the synchronous motor, a speed regulator panel, and a d-c. control panel.

Installation of the equipment will be begun about March 1 when the first drive will be installed. The other drives will be installed subsequently at intervals of two weeks between the installation of each drive. The installations will be made between Saturday noon and Monday morning to obviate stopping regular production.

Central Ohio Paper Continues to Expand

The Central Ohio Paper Co., general paper merchants, Columbus, Ohio, took another forward step recently by completing an addition to its building. This company has made steady progress during the 58 years of its existence, and now has one of the largest buildings of its kind in the country.

Albert Miller is president and general manager of the company and O. A. Miller is chairman of the board. The capital of $2,000,000 is owned entirely by members of the company together with employees. Not a single share of the stock has been sold outside of the organization.

W. F. Lawrence, son of the late James Lawrence, organizer and president of the Lawrence Bag Company and the Raymond Bag Company, took his father's place at the head of the two organizations at the annual election of officers of the two firms.

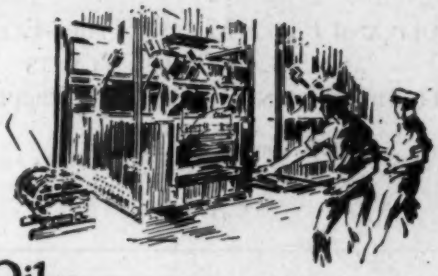
Higher Duties on Deckle-Edge Paper

After a prolonged discussion between the customs authorities and the experts of the Import Committee of the American Paper Industry, the customs officials have put into effect an important change of practice involving the classification of high grade mold made papers. These papers have long been imported as printing papers, dutiable at ¼ cent per pound and 10 per cent. The customs authorities have now been convinced that these papers, which are made with a deckle edge, are properly dutiable as machine handmade papers, and will henceforth be held for duty as imitation handmade papers at 3 cents per pound and 15 per cent.

Printing Paper Improperly Entered

The decision secured in the United States Court of Customs and Patent Appeals, under which imports of paper improperly entered as standard newsprint were classified as printing paper and subject to duty, has resulted in the abandonment of many cases which the importers had carried to the Customs Courts, hoping to secure a favorable decision. This was one of the most important problems undertaken by the Import Committee soon after its organization. Thirty-four cases involving the importation of printing paper containing more than 30 per cent sulphite, in which the importers claimed the paper to be duty free as standard newsprint have been abandoned by the importers, as a result of the decision by the appellate court. Much of the paper was intended for a religious publication which was endeavoring to secure entry of foreign paper without paying the duty which the tariff laws provide. Another series of importations of supercalendered paper, also held dutiable as printing paper, but claimed to

A Positive Air Supply at low Power Cost



For Oil or Gas Fired Furnaces

Good combustion requires a dependable supply of air at the burner. Low operating costs require efficient blowers, pumps, etc.

Connersville Blowers

meet both requirements because of these characteristics.

1. The delivery of a definite volume of air to the burner.
2. The air is moved without surging.
3. Moderately high operating speeds result in a practically steady flow of air.
4. Highest efficiencies at air pressures of 8 ozs. to 5 lbs.—the range of most burners.
5. Efficiency maintained because of no internal contact.
6. Moderate operating speeds since pressure is most dependent on high velocity.
7. Low power per cu. ft. of air handled—a result of the other characteristics.

The power economy of Connersville Blowers is in itself sufficient reason for their use, but the other advantages being added values. Send for descriptive bulletins.

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be duty free as standard newsprint, and some of this also involving religious publications, was abandoned; the importations of this latter type of paper totaled eight, some being of esparto pulp. Most of the paper involved in the above cases was from Scandinavia, though some was from Holland, Scotland and England.

Thirteen importations of envelopes held by the customs officials to be subject to an additional duty of 10 per cent for special finish were scheduled for hearing before the United States Customs Court, but before the cases came to trial the importers decided that the previous decisions on the question of special finish did not offer much chance of success before the court, and all of the cases were abandoned.

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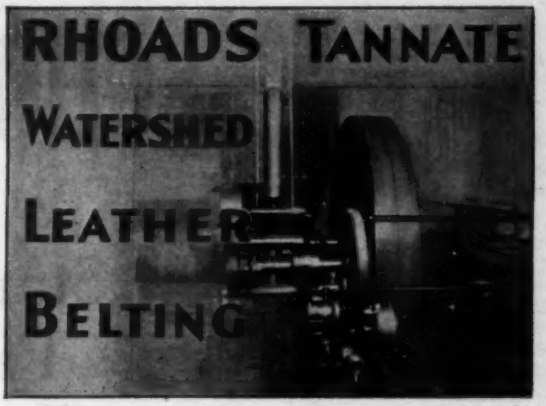

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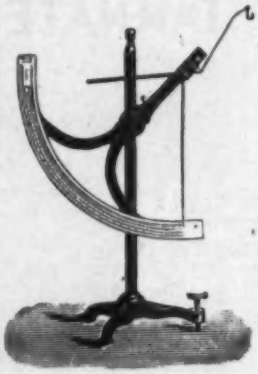

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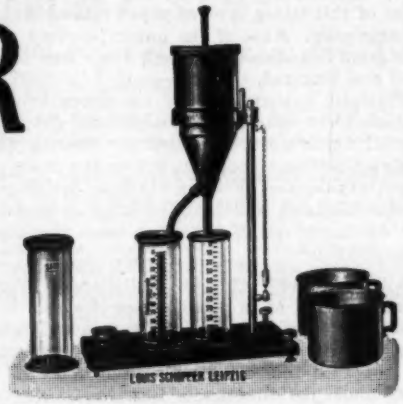

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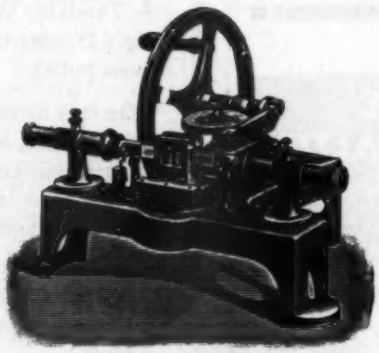

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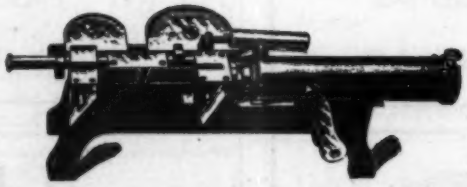

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Technical Developments in the Paper Industry

Domestic and Foreign

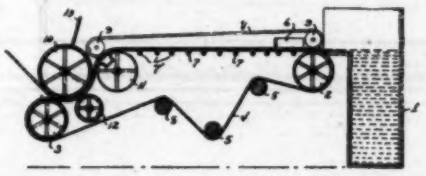
The following abstracts are of the latest developments found in the foreign press and the domestic and foreign patent offices. Photostats and translations of complete articles and patents can be obtained at cost price.

Making Pulp

A METHOD of producing pulp for the manufacture of snow-white paper of great strength is described. This includes treating the cellulose-containing material in a hot aqueous solution including free sulphur. After digestion, the material is separated from the waste liquor and is then treated in a hot diluted solution. Both of these treatments are carried out at a temperature of approximately 160 to 173 degrees C. Then the material is refined in suitable apparatus. J. J. de la Roza, Sr., assignor, Bagasse Products Co., New York, N. Y. United States Patent No. 1,721,376, filed June 11, 1927.

Papermaking Machine

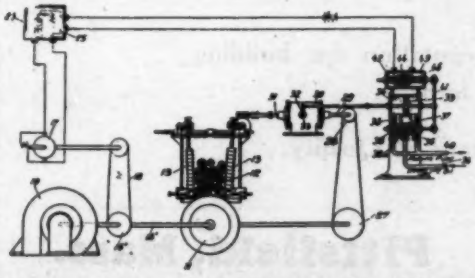
THE papermaking machine consists of a breast roll, a driving roll and an endless wire belt which passes over the rolls. There are also provided a suction roll and table rolls for supporting the belt between the suction roll and the breast roll. An upper couch roll is arranged between the



suction roll and the driving roll. This presses the wire and sheet upon the driving roll. A pressure roll is arranged between the suction and driving rolls and engages the under face of the wire and presses the wire and sheet against the upper couch roll. A deckle is provided for forming and holding the edge of the sheet between the breast and suction rolls. M. R. Ware, Westminster, Md. United States Patent No. 1,737,781, filed Sept. 5, 1928.

Wood Pulp Grinding Plant

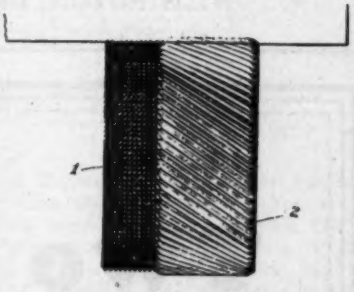
THE plant consists first of a prime mover (10) and a grindstone (11) which is connected with the prime mover in the manner shown in the accompanying illustration. Wood



feeding means (13) are provided for feeding the wood (12) against the surface of the grindstone. The wood feeding means (13) are controlled by the device (33) which serves to regulate the speed at which the logs (12) are pressed against the stone. The generator (17) is connected with the prime mover (10), and this generator is driven at a speed proportional to the velocity of the prime mover (10). The result is that an electric current is generated depending in strength on the velocity of the prime mover. An electrical device (44) is influenced by this current, as the illustration shows, and this electrical device is connected with the controlling mechanism so as to cause acceleration of the rate at which the logs are fed to the surface of the grindstone, when the velocity of the prime mover (10) is increased. The result is that any change in this velocity is immediately counteracted. F. Groessler, Hermsdorf, Germany, assignor, Linke-Hoffmann Werke A. G., Fullnerwerke, Warmbrunn, Schleisen, Germany. United States Patent No. 1,721,863, filed Feb. 9, 1928.

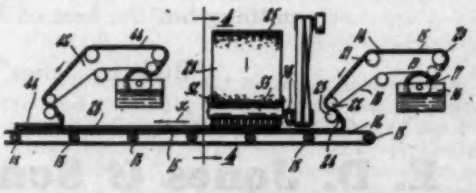
Burr for Dressing Pulp Grindstones

A COMPOSITE burr for dressing pulpwood grindstones consists of two sections combined for simultaneous rotary and simultaneous traversing movement from side to side of the stone. The two sections of the stone are shown at (1) and (2) in the accompanying illustration. The teeth of one section has edges for scoring the stone and the teeth of the other section are of dissimilar character for dressing the stone surface. One of these sections follows the other as the burr is moved from side to side of the stone. Both of the sections are cylindrical. One of the sections has its toothed surface of less diameter than that of the other section. F. W. Aikin, Watertown, N. Y. United States Patent No. 1,737,551, filed Oct. 22, 1925.

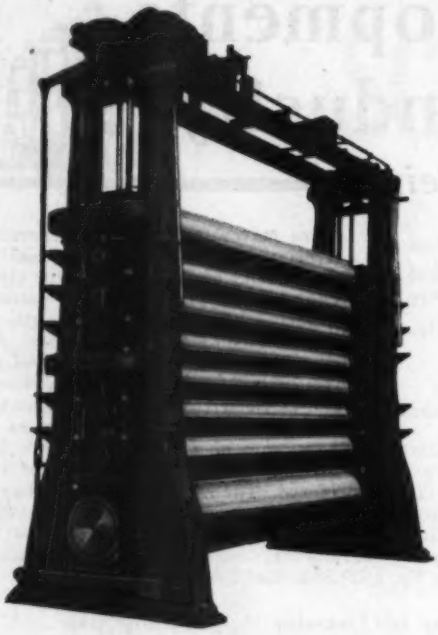


Laminated Pulp Board

THIS patent is concerned with an improvement in the continuous process of making laminated pulp board. A laminated strip is made from semi-fluid pulp. The process consists in forming on a rotary cylindrical mold (17) a web in which the grain extends longitudinally. This web, while



still wet, is transferred from the mold (17) to a supporting conveyor (12). The wet web (15) is transferred from the conveyor (12) to roll (25) which is located beside the conveyor (12). The web is detected from the periphery of the roll (25) by means of a doctor (33). This allows the detached



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portion of the web to drop upon a substantially horizontal support and moving the support longitudinally in close proximity to the doctor and reciprocating the dropping portion of the web crosswise of the support. The result is that a strip is formed composed o fzigzag outer and inner stretches parallel with the grain, crossing each other and caused by the wetness of the pulp to adhere to each other. The grain of the outer stretches crossing that of the inner stretches. The strip is dried to stiffen it and increase the adhesion of the stretches to each other. R. L. Loomis, Bedford, Mass., assignor, C. F. Burgess Laboratories, Inc., Madison, Wis. United States Patent No. 1,737,284, filed Aug. 5, 1926.

Testing the Strength of Paper

THE author first discusses the American methods which have been used in testing the strength of paper. He gives a complete record of the experiments that he himself

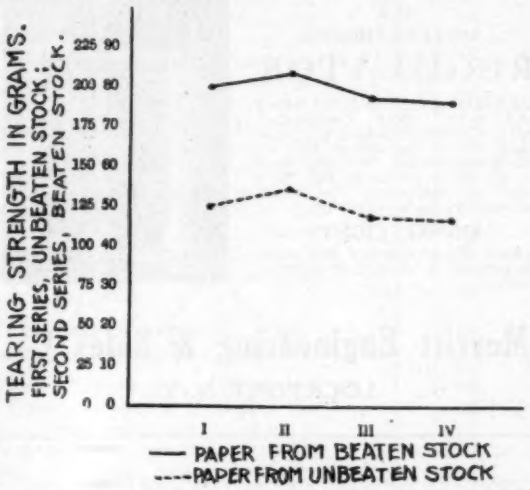


Fig. 1—Tearing length of sulphate pulp

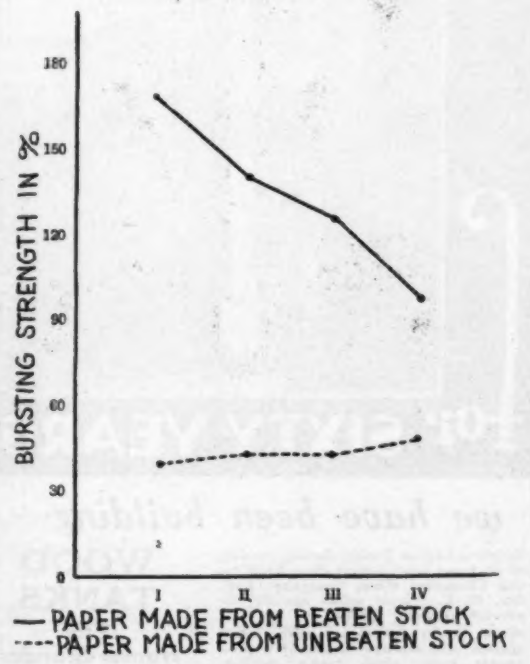


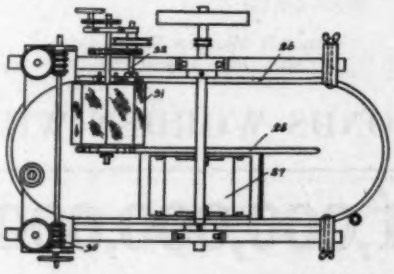
Fig. 2—Bursting strength of sulphate pulp

carried out with the American standard method. The results are given in tabular and curve form, some of the latter being reproduced here. He concludes that the American method possesses certain value for determining the quality of bleached pulp, but he disclaims its usefulness for testing kraft papers.

A number of studies and experiments were carried out in Swedish plants to develop a method which would be a standard for testing paper. The final result was a method which is described in full detail in the original article. The tests are carried out on machine-dried paper. The method gives exact instructions for beating, determination of the degree of beating by the Schopper-Riegler apparatus forming the sheet of paper, sucking off the water, pressing, drying and finally testing. The tests are carried out at an atmospheric humidity of 65 per cent relative humidity and at a temperature of 20 degrees C. The sheets of paper are hung in the room under these conditions for at least three hours before the test is made. The weight of the sheet of paper at 65 per cent relative humidity is 100 grams per square meter. The article also contains a long discussion by the editor of the paper, for the subject of standardization of strength testing of paper is one of vital importance to the paper industry throughout the world. G. Hall, Der Papierfabrikant, 1929, pages 341 to 348.

Paper from Peat

THE process of making paper from peat consists of the following steps: The peat is first torn in its natural state into fiber. Then rags are cut into clippings, and the clippings are introduced into a combined beater, which is



shown in the accompanying illustration. This beater comprises a grinding and washing machine besides a beater. Half stuff is formed in this machine. Then 75 parts by weight of peat fiber is introduced into the machine for every 25 parts of weight of half stuff contained in it. The surplus water is then drained off from the mixture. Rosin and alum are added to the latter and the mixture is then drawn off itself and made into paper. C. C. Roth, Westfield, Wis., assignor, Peat Products Co., Westfield, Wis. United States Patent No. 1,721,974, filed April 23, 1926.

Digestion of Red Beech and White Birch by the Sulphite Process

THE only process that has been described for digesting red beech is that developed by Heuser and Ohlsen. The wood is indirectly digested with a very strong and lime-rich liquor containing 5.7 per cent total sulphur dioxide and 2.12 per cent of lime. The results were negative and it was concluded that the liquor must contain still more lime. The greater density of the beechwood makes necessary a longer digestion period, in order to obtain thorough saturation of the wood with the liquor.

A process was developed for digesting this wood in the form of the usual size of chips. The normal kind of digestion liquor was used but the digestion was prolonged for three hours at a temperature of 95 degrees C. Good results were obtained. A number of experiments were carried out on a plant scale and the results are given in tabulated form in the article.

White birchwood was digested in the form of chips with the aid of a liquor containing 4.48 per cent total sulphur dioxide, 1.12 per cent of lime. The temperature of digestion was at a maximum, 146 degrees C., the maximum pressure

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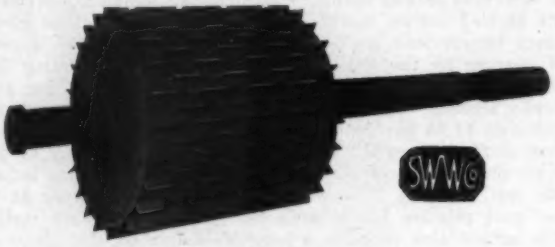

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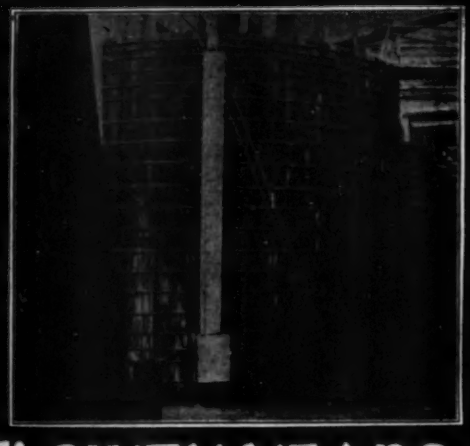

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was 6.5 and the time of digestion was eight hours. The white pulp was somewhat lighter in color than that obtained from the beechwood. Dr. O. Wurz, Der Papierfabrikant, 1929, pages 495-8.

Determining the Chlorine Consumption Coefficient of Sulphite Pulp

THE Sieber number, as the chlorine consumption number is called, is a most useful test, for the same bleach, namely chloride of lime solution, is used in its determination as in practical bleaching. The Sieber number has moreover a direct connection with the lignin content of the pulp, which makes the method particularly well suited not only for establishing the easy bleaching qualities of the pulp, but also to establish the degree of digestion or disintegration of hard pulps.

There are certain difficulties which are encountered in the use of this method. The author's investigations revealed that the required solution to be used in testing the pulp should contain ten grams of chlorine per liter. Various other details of the method are described with certain modifications which make it possible for the method to be used by those inexperienced in chemical testing. W. Humm, Der Papierfabrikant, 1929 pages 387-9.

Digesting Wood with Magnesium Bisulphite Liquor

DETAILS are first given on the methods used in preparing the magnesium bisulphite liquors. There are two practical methods used—the tank system and the tower system. The experimenter used in the first method, sulphur dioxide gas being conducted into milk of magnesia. It was found that the latter absorbs the gas more effectively than milk of lime. Irrigating towers filled with limestone or other fillers with milk of magnesia in the place of water is advantageous in that more liquor is produced with the milk of magnesia and the formation of gypsum in the tower is less to be feared. It is also stated that a magnesium chloride solution is better for digestion liquor preparation than magnesium hydroxide.

Details are given on the digestion process. Care must be taken to shorten the process as much as possible, and a temperature of 100 to 110 degrees C. should be reached in the digestion as quickly as possible. When the temperature is too high, sufficient sulphur dioxide for solubilizing the lignin in the wood is not available and the lignins are polymerized to resinous compounds. Such polymerization, which stops the digestion, can however be avoided by correct operation of the process. Sufficient base must also be present to neutralize the lignosulphonic acids formed; otherwise the digestion is faulty. Tests showed that 100 degrees C. is the proper reaction temperature.

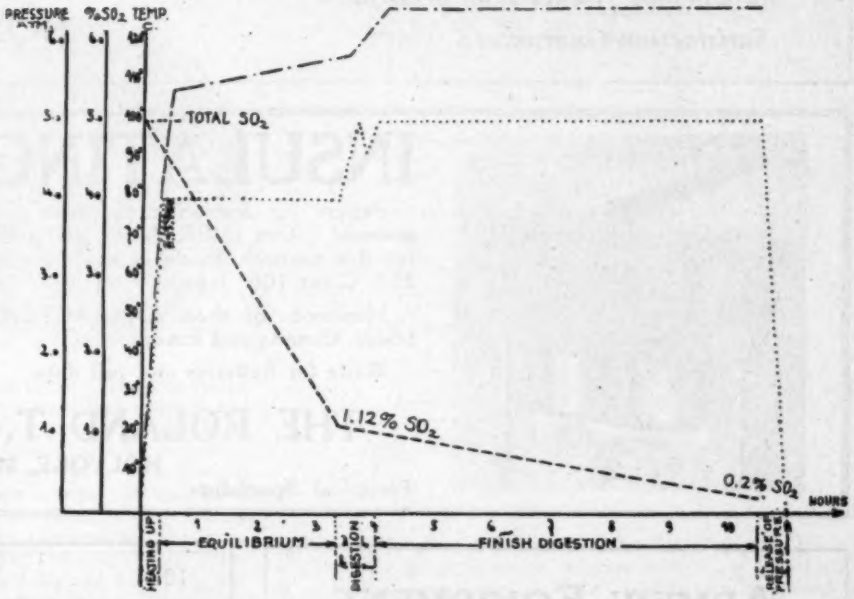

Fig. 1—Digestion diagram. ——·—— Temperature curve; ..... Pressure Curve; - - - SO_2 curve

A series of digestion tests were carried out, the conditions being varied in each of the five series. Details are given in the original article.

The pulp is washed in a washer-beater and is further purified by passing it through a sand catcher and a knot catcher. Unbleached and bleached pulps were then prepared from the stock, the bleaching being carried out in one case with three per cent chlorine and in another case with six per cent chlorine.

The pulps obtained were examined for various physical and chemical characteristics. The copper number, the chlorine consumption number (Sieber number), the alpha cellulose content and the lignin content were determined.

The general conclusion is that the use of magnesium hydroxide and bisulphite liquor is advantageous when used in place of all or part of calcium bisulphite liquor. One definite advantage is shortening of the time of digestion. The use of magnesium bisulphite liquor alone reduces the copper number of the pulp, which is advantageous. It also has an important effect on the Sieber number, the results showing that the pulp obtained was more easily bleached, lighter in

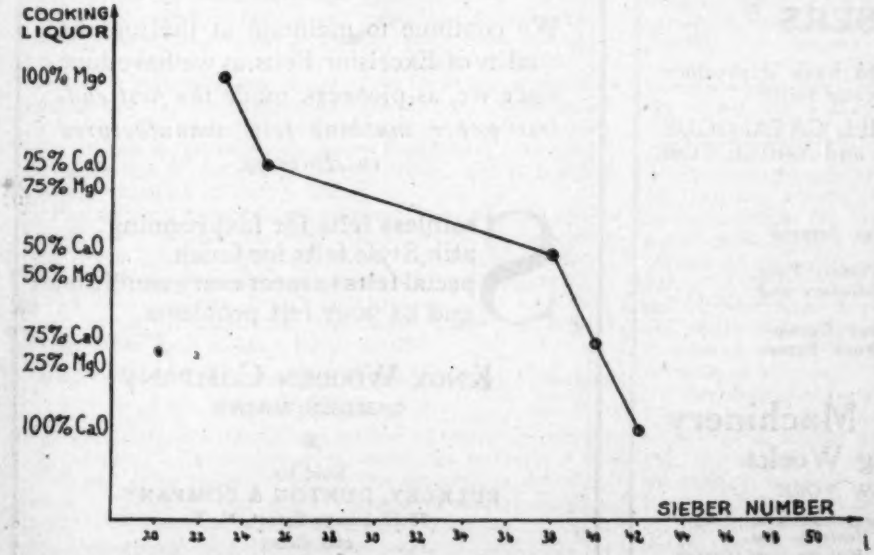

Fig. 2—Bleachability of pulp at different liquor composition

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color and possessed a silky luster. The lignin content and also the ash content of the pulp decreased, the more magnesium bisulphite liquor was used. Dr. von Poassanner, Der Papierfabrikant, 1929, pages 537 to 543.

Sclerenchyms in Straw Pulp Paper

THIS is a contribution from the governmental testing laboratories at Berlin-Dahlem concerned with the sclerenchymtic spots on paper made from straw stock. The different sclerenchymtic cell forms are shown in the illustration. The question is who is responsible for the spots, the manufacturer of the pulp or of the paper. There is no agreement on this problem at the present time.

Tests were accordingly made on samples taken from twelve different sources. Three hundred grams of the sample (air dry) were softened in cold water for eighteen hours and then beaten in an experimental beater with lifted beater roll for thirty minutes. Sheets of paper were then made from the stock and dried on steam heated cylinders. The dried sheets were then pressed between zinc plates, a sheet of blotting paper being placed between the zinc plate and the paper. The spots on the paper sheets prepared in this manner were then counted and identified under the microscope. The results were tabulated.

The results showed that of the twelve sample tests only one was free from the sclerenchymtic spots. No general conclusions could be drawn from the results. It was, however, stated that inasmuch as the sclerenchyms are mostly found in the knots and spikes in the straw, it would appear that greater care in the cleansing of the chopped-up straw would avoid this condition to a certain degree. Dr. Korn, Der Papierfabrikant, 1929, pages 311 to 314.

Rags and Their Preparation in Papermaking

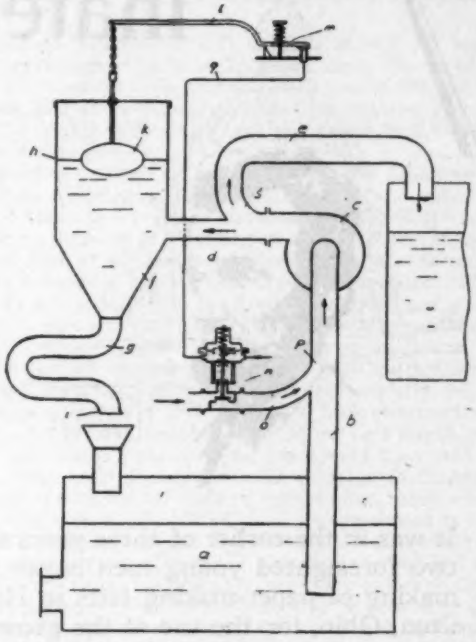
THE general details of the methods used in the preparation of rags for the manufacture of paper are described, Attention is called to the uselessness of judging the grade of the rags from a small sample. A ton should be available for making the test. The various grades of rags are described and the variation in the quality studied. In digestion of the rags it is pointed out that a slow boil at a fairly low pressure will give better results than a quick boil at an elevated pressure. In using lime in place of sodium hydroxide or soda ash, there is risk of the formation of insoluble compounds, and the rags are often hardened. Nevertheless, in some mills, where the wash water is very soft, the addition of lime seems to be absolutely imperative; otherwise it is impossible to get rid of all the grease, and it is found coating the sides of the breaker.

The rags are washed in the breaker. The principle of this operation is to undo the work of the textile manufacturer and brush out the rags into threads. Considerable care is required in handling the machine, as otherwise the stock is irreparably damaged. Bleaching is also discussed, as well as beating. R. H. Clapperton, The Paper Maker and British Paper Trade Journal, 1929, pages 255-257.

Automatic and Continuous Preparation of Constant Stock Mixtures

THE illustration shows one method of carrying out the invention. The container (a) holds the mixture of the stock and other materials before the proportions are regulated. The pump (c), which operates to deliver constant supplies of materials, sucks the mixture from the container (a) through the pipe (b) and the pipes (d) and (e), the pipe (d) leading into the measuring container (f).

The mass collects in this measuring container and runs back through a coiled pipe (g) arranged at the bottom of the container and through the outflow (i) into the container (a). Inasmuch as the speed of the flowing mass is quite slight or is anyway decreased somewhat by the resistance of friction of the walls of the pipe, a certain quantity of the mass collects in the container (f). A liquid level forms at (h). The less mass emerges through the outlet (g), the



higher the level of liquid rises. The float (k) with the aid of the lever (l) actuates an ordinary regulating device (m). A membrane regulating valve (n) is actuated by means of regulating line (q), so that the valve (n) is opened as the float (k) rises and vice versa the valve is closed as the float (k) falls.

The valve (n) regulates the flow of a diluting liquid in the pipe (o), for example water, which is added at (p) to the mass sucked into the tube (b). When the mass attains the desired density, then the valve (n) is closed by the float (k) and the regulating device, inasmuch as a particular addition of water to the mass is no longer necessary. The main stream of the finished regulated mass floats through the pipe (e) into the container (r). The finished, regulated mass is located in the container (r) and the mass is then in satisfactory consistency for the manufacture. The mass from the second mill is then added from this point on.

As may be seen from the illustration, the flow of mass from the pump (c) is divided at (s) into a partial stream, which flows through the pipe (g) to the measuring container (f), and into a main stream, which flows through the pipe to the container (r). It is consequently satisfactory to pass a part of the current towards the container (f). This partial current in the container (f) effects the regulation of the valve (n) by the height of the float (k). The container (f) can be constructed in comparatively small size in this manner, while in another case, when the total mass is passed through the measuring container (f), this container (f) must be made in very large dimensions.

Other devices may also be used in the place of the float to establish the static head of the mass in the vessel and also to effect the impulse at the regulating device. A straight pipe (g) is used in the place of the crooked pipe (g) and the outflow from this pipe is made smaller. In each case a level of liquid must be produced by the frictional resistance of the outflowing mass, which is proportional to the consistency of the mass. Arca-Regler A. G., Berlin, Germany. German Patent No. 476,338, filed July 10, 1928.

In the year Lincoln was nominated for the senate.

In 1858 the Republican Party of Illinois nominated Abraham Lincoln as its candidate for the United States Senate. Lincoln lost the election but won for himself the nomination—and election—as President of the United States, two years later.

It was in the earlier of these years that two foresighted young men began the making of paper-making felts in Hamilton, Ohio, for the use of the growing industry in the Miami Valley.

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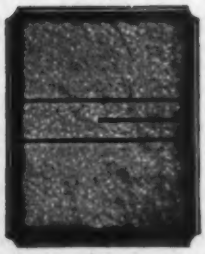

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Hamilton Felts

New York, February 1, 1930.

FROM a general standpoint, there is a rather hesitant attitude being displayed by buyers of paper in their present market operations. Nearly every one appears to be waiting to see the drift of business in the new year, and to be exerting every effort to proceed as carefully as possible in acquiring supplies other than for immediate use. All the talk about the business uncertainty as a result of the stock market crash last autumn has, without a doubt, put a quietus on business, and not so much because actual business is poor or subsiding, but because of the ultra conservative policy in buying that consumers, distributors and manufacturers in just about every line have adopted.

However, the market for paper is far from dull. If anything, there is a better than normal flow of supplies from mills into distributing and consuming channels, and, judging from reports, a large majority of paper mills in the United States are working at a fairly brisk pace, and, what is of more importance, are managing to find an outlet for the bulk of their production. In fact, it can be stated that most paper manufacturers are keeping their output down to the actual tonnage, or as near as can be safely gauged, that their orders call for, which is a very healthy and favorable sign.

Jobbers in New York City report a consistent and gradually increasing demand for the various classes of paper. True, a majority of orders call for comparatively small lots, but this condition is expected to improve soon. Contracting on a large scale by publishers, printers, converters and other buyers since the first of the new year has been active, and it is said that, notwithstanding the cautious policy of buyers, equally as much paper has been bought on contract as in any former year by this time. The common feeling of members of the trade is that the general business situation will become better as time moves on, and some openly predict that business will experience a period of brisk and healthy activity later this year. In nearly all quarters, as a matter of fact, the future is viewed with much optimism, and a belief that business is going to be good and stable. Obviously, if this proves to be the case, the paper industry will share to its full extent in the general activity.

Statistics compiled by the News Print Service Bureau show that new high records of print paper production and distribution were established on the North American Continent last year, as had been generally anticipated as 1929 wore on and production figures continued to pile up a gain over the previous record reached in the preceding year. Adding to the production of the regular newsprint mills reporting monthly throughout the year the small amount of newsprint made by mills whose product is chiefly other grades of paper, the total North American output of newsprint in 1929 was 4,395,283 tons, of which 2,728,827 tons was manufactured in Canada, 1,392,276 tons in the United States, 255,500 tons in Newfoundland, and 18,680 tons in Mexico. The Canadian production was 14.6 per cent more than in 1928, that in the United States 1.8 per cent less, with a gain of 10.7 per cent in Newfoundland and 10 per cent in Mexico, making a total Continental increase of 348,883 tons, or 8.6 per cent.

Newsprint production in the United States in December was 112,583 tons, and shipments from mills 117,131 tons, compared with 113,729 tons made and 116,726 tons shipped in November, while Canadian mills produced 230,008 tons and shipped 234,100 tons in December, against 252,046 tons produced and 253,219 tons shipped in the preceding month, making a total for the two countries of 342,591 tons made and 351,231 tons shipped in December, contrasted with 365,775 tons produced and 269,944 tons shipped out during November. The Canadian mills operated at 85.6 per cent of their rated capacity in December, the U. S. mills at 79.9 per cent, and the Newfoundland mills at 107.2 per cent. Stocks of newsprint at Canadian mills totaled 24,946 tons at the end of December, and at U. S. mills 19,023 tons, making a combined total of 43,969 tons, which was equivalent to 2.7 days' average production.

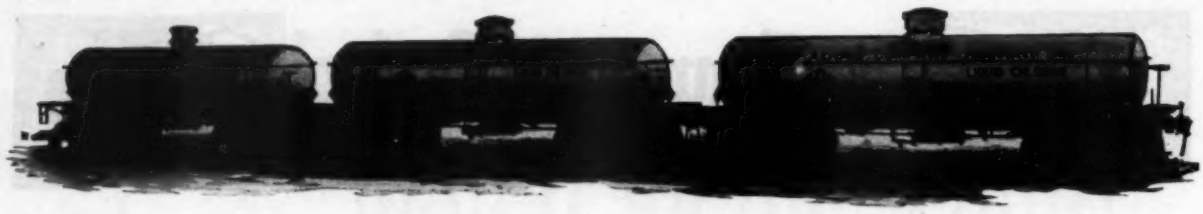
According to identical mill reports to the American Paper and Pulp Association, production of paper and board in the United States in November last amounted to 565,916 net tons, showing a decrease of 9 per cent as compared with the total of 619,897 tons of all grades produced in the preceding month, but an increase of one per cent over the November, 1928, output. Paper production in the first eleven months of 1929 registered a gain amounting to 6 per cent for all grades over the similar period of 1928. The November production of all individual grades excepting newsprint, felts and building, and bag and wrapping papers showed an increase over the output in the same month of 1928. Uncoated book paper output was 17 per cent greater, hanging paper 10 per cent larger, writing 7 per cent, tissue 5 per cent, and paperboard 2 per cent. Shipments from mills during November aggregated 561,499 tons, contrasted with 625,143 tons in October last, while stocks at producing mills at the end of November amounted to 248,359 tons of all grades, against 249,699 tons a month earlier.

Paperboard production in the United States reached a total of 237,508 net tons in November, recording a decline from the 264,631 tons produced in the preceding month, according to the monthly statistical summary of the board industry compiled by the U. S. Department of Commerce in Washington. Board mills produced at 80.4 per cent of their rated capacity in November, contrasted with 82.9 per cent in October. During the first eleven months of 1929, board output aggregated 2,726,232 tons, showing an appreciable gain over the 2,477,099 tons manufactured in the corresponding time of 1928. New orders received by mills for board in November called for 211,328 tons, against 264,338 tons in the preceding month; unfilled orders held by manufacturers at the end of November were for 67,304 tons, against 85,600 tons a month earlier; shipments of board from mills totaled 233,717 tons in November, compared with 268,494 tons in October, while stocks of board at mills at the close of November amounted to 60,689 tons, against 59,244 tons a month previously.

Newsprint is moving into consumption in a steady way, although there has been a little falling off of consumption in the last couple of weeks, judging from the New York City daily newspapers. This is rather a seasonal development, however, and a mounting of consumption probably will be witnessed, as usual, as the pre-Easter retailing period draws nearer. There is agitation now for a rise in the contract basis on newsprint at the half-way point in the current year, but it is of course too early as yet to say what the outcome of this movement within the trade will be.

Wrapping is fairly active, and quoted prices are steady. Fine papers are enjoying a comparatively good demand, and mill quotations are well maintained. Tissue is seasonably quiet, but prices are holding. Book paper is moving freely on contracts, and there is at least a normal transient demand in the market. Fancy papers and specialties are in routine call, and are maintaining their price levels. Boxboards are quiet, and quoted prices are on the easy side.

Chain Belt Company sales for 1929 are just over eight million dollars. This is nine hundred thousand dollars more than in 1928, according to C. F. Messinger, general sales manager. It is expected that the Chain Belt Company's earnings for 1929 will be $7.00 per share. For 1928, they were $5.27, and the average for five years is $5.10.



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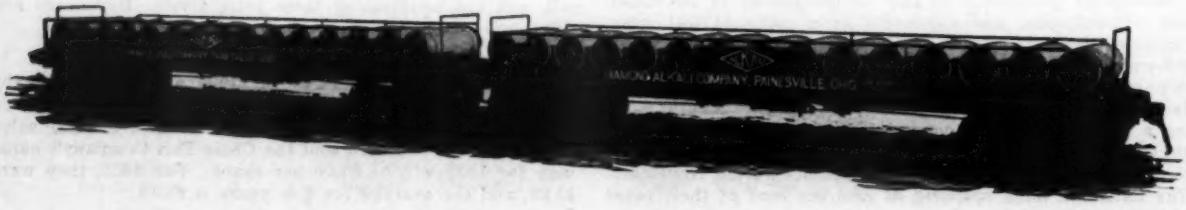

Papermaking Rags

There has been some broadening of activity in papermaking rags since the outset of the new year, and yet it is reported generally that the market has not opened up to the extent that the trade had anticipated by this time. Consumers are proceeding rather cautiously in acquiring supplies, and appear to be confining their orders principally to material actually and directly required, with the result that most of the transactions recorded involve rather small-sized quantities of rags. Papermakers seemingly are taking the view that there is no shortage of rags available, or at least that the supplies to be had are altogether ample to cover present wants, and that there is little likelihood of any scarcity arising even though demand should expand further, and the policy now in vogue, so it would appear, is to buy only as needs develop and let future requirements take care of themselves.

Nevertheless, the market is exhibiting more life, and certain classes of rags are said to be moving to paper mills in a steady manner, and in large enough volume to absorb the bulk of supply becoming visible. The statistical position of papermaking rags seems fairly firm. While buyers are experiencing no difficulty getting all the stock desired, at the same time there appears every reason to believe that accumulations in the hands of packers and dealers are light, doubtless lighter than are usually carried. Collections all through the country have been hampered in recent weeks by inclement weather conditions, and reports state that importations have dropped off, owing in part to relatively higher prices obtaining in the markets abroad than here, with the result that shippers in Europe have not pressed sales to America and have directed comparatively small lots to export channels.

In other words, this is the time of the year—in the middle of the winter—when incoming supplies of rags invariably are smallest, but with the spring only a short time away and with it the usual increase in rag collections, paper manufacturers are not hurrying to buy while expecting available supplies to mount in the near future. Meantime, dealers are maintaining quoted prices, and are not pressing to sell. Their contention is that rag prices are too low as it is, when all the circumstances are taken into consideration, and in a large majority of cases, dealers are refusing to grant any further concessions in price, and, having limited stocks on hand, can well afford to hold out for the figures asked. Consequently, a fairly firm undertone marks prices, and it is admitted by mill buyers that they find it necessary in most instances to meet the rates quoted in order to get the rags desired.

Domestic roofing stock has firmed slightly to where dealers in the east are demanding 1.90 cents a pound f.o.b. New York for No. 1 packing or cloth strippings, and 1.30 to 1.35 cents a pound for No. 2 stock or mixed satinets. Foreign roofing, on the other hand, is largely neglected by roofing paper mills, and is reported fetching only about 1.55 cents ex dock New York for dark colored cottons and 1.80 to 1.85 cents for linsey garments.

New cotton cuttings of some grades are wanted in moderate quantities, with especial buying interest directed to fancy shirt cuttings, unbleached muslins, canton flannels, washables and khaki cuttings. Dealers are asking 10.75 cents and higher per pound f. o. b. New York for unbleached muslins, 6 cents for fancy shirt cuttings, 9.50 cents for bleached canton flannels, 6 cents for O.D. khaki cuttings, and 5 to 5.25 cents for washables. No. 1 new white shirt cuttings are reported available to mills at as low as 8.75 cents a pound at shipping points, although most quotations are above this level.

Old white and blue cottons are in moderate routine demand, and are steady quotably. Repacked No. 1 whites are selling at around 6 cents a pound at dealers' shipping points, and repacked thirds and blues at 2.50 to 2.75 cents, with higher asked for extra quality packings. Foreign rags of most types are in relatively slack demand.

Average quotations f.o.b. shipping points and ex dock New York are as follows:

New Stock—	New York and Chicago
White shirt cuttings, No. 1	8.75– 9.25
White shirt cuttings, No. 2	6.50– 7.00
Fancy shirt cuttings	6.00– 6.25
Washables, No. 1	5.00– 5.25
Unbleached muslins	10.75–11.00
White lawns	9.00– 9.25
Overall cuttings, blue	7.75– 8.00
Black silesias	4.75– 5.00
Canton flannels, bleached	9.50–10.00
Canton flannels, unbleached	8.00– 8.50
Shoe cuttings, bleached	7.50– 7.75
Shoe cuttings, unbleached	6.50– 6.75
Light silesias	8.00– 8.25
O. D. khaki cuttings	6.00– 6.25
Mixed khaki cuttings	5.00– 5.25
Corduroy cuttings	3.25– 3.50
Cottonade cuttings	3.00– 3.25
Linens, No. 1 white, foreign	14.00–15.00
Light prints, foreign	4.00– 4.50
Old stock—	
Whites, No. 1, repacked	5.50– 6.50
Whites, No. 2, repacked	2.75– 3.00
Whites, house soiled	2.00– 2.25
Whites, street soiled	1.75– 2.00
Lace curtains	5.00– 5.25
Thirds and blues, rough	1.80– 2.00
Thirds and blues, repacked	2.50– 2.75
Black stockings	4.10– 4.25
Cotton canvas, No. 1	4.25– 4.50
White cotton batting	2.50– 2.75
Roofing, No. 1 (cloth strippings)	1.85– 1.95
Roofing, No. 2	1.30– 1.35
Linsey garments, foreign	1.80– 1.85
Dark colored cottons, foreign	1.55– 1.60
Blue linens, foreign	4.00– 4.50
Gray linens, foreign	4.50– 5.00
White linens, foreign	8.00– 9.00
Light prints, extra, foreign	2.50– 2.75

Rope and Bagging

Both old rope and bagging have been in a quiet market position recently, and there is little or no improvement as yet detected. Paper manufacturers are buying here and there as their requirements oblige them to, but the movement of supplies into consuming channels is at best of limited volume, and prices are rather in favor of those on the buying side. In fact, market rates on old rope have eased a bit more to where purchases of No. 1 domestic old manila rope are reported at 4.50 cents a pound f.o.b. shipping points, and of foreign old manila down to 4 cents per pound ex dock New York and other U. S. Atlantic ports. Indications are that dealers are eager for mill orders even at these prices, and it is possible that in exceptional instances some old rope is being obtained at a shade under the figures asked by sellers.

Old bagging also is tending downward in value, with reports telling of No. 1 scrap burlap being available at 1.60 cents a pound at dealers' shipping points, and perhaps at slightly below this basis, and roofing bagging at 1.15 cents a pound. Some pressure has been noted to sell bagging, particularly

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roofing grade, for which there is a distinct lack of worth-while demand. Mixed strings are wanted in routine fashion and quantities at a price level of about 90 cents per hundred pounds at shipping points. Gunny bagging is in better call than it was, and prices are a bit firmer.

F.o.b. shipping point and ex dock New York quotations follow:

	New York and Chicago
Gunny, No. 1 domestic	1.55– 1.65
Gunny, No. 1 foreign	1.50– 1.60
Scrap bagging, No. 1	1.55– 1.65
Roofing bagging	1.10– 1.20
Wool tares, heavy	1.65– 1.75
Wool tares, light	1.55– 1.65
Manila rope, No. 1 foreign	4.00– 4.25
Manila rope, No. 1 domestic	4.50– 4.75
Sisal strings	1.75– 2.00
Mixed strings	.90– 1.10

Old Paper

Insofar as the low grades are concerned, the old paper market is in a truly deplorable condition. Demand from board and paper mills is very slow, to put it mildly, and sellers are so eager for orders that prices have been forced still lower notwithstanding that market rates have been for sometime on levels at which dealers have suffered severe losses in collecting and packing waste paper. The New York market appears to furnish the crux of the situation, with prices there ruling lower than have been known in years. Old No. 1 mixed paper is reported available at as cheap a price as 15 cents per hundred pounds f.o.b. New York, and folded newspapers at 35 cents. There is little or no demand for container manilas, and prices of such stock as well as of other low grades are uncertain and strictly nominal.

White shavings are in fair movement, and prices are relatively steady. Soft white shavings are selling at 2.50 to 2.90 cents a pound f.o.b. shipping points, and No. 1 hard white at 2.60 to 3 cents, depending on the quality of packing. Book stock also is in moderately good demand and steady in price at 1.30 cents a pound at dealers' shipping points. Kraft grades tend downward, with mill demand slow.

The following are quotations named by dealers f.o.b. shipping points, some of which are mainly nominal:

	New York and Chicago
Hard white shavings, No. 1	2.60– 3.00
Hard white shavings, No. 2	2.40– 2.60
Soft white shavings	2.50– 2.90
Colored shavings	.90– 1.10
Heavy book, No. 1	1.25– 1.35
Crumpled book, No. 1	1.00– 1.10
Ledger stock	1.10– 1.35
Kraft No. 1	1.50– 1.65
New kraft cuttings	2.25– 2.40
White blank news	1.70– 1.80
Manilas, No. 1	.55– .65
Manilas, container	.35– .40
Folded news	.35– .45
Sulphite mill wrappings	.50– .60
Old corrugated boxes	.40– .50
New corrugated box cuttings	.60– .70
Mixed paper, No. 1	.15– .30
Common paper	(Nominal)

Pulpwood

It is stated that some difficulty is being experienced in getting wood out of the forests owing to lack of snow in certain wood-cutting regions, but no effect is as yet noticed in the market. Demand is reported fair, with the movement against contracts continuing in a steady manner.

Exports of pulpwood from Canada in December amounted to 67,116 cords, valued at $694,955, all of which came to the United States, compared with 52,904 cords of a value of $589,331 exported in the preceding month, according to official Canadian Government statistics.

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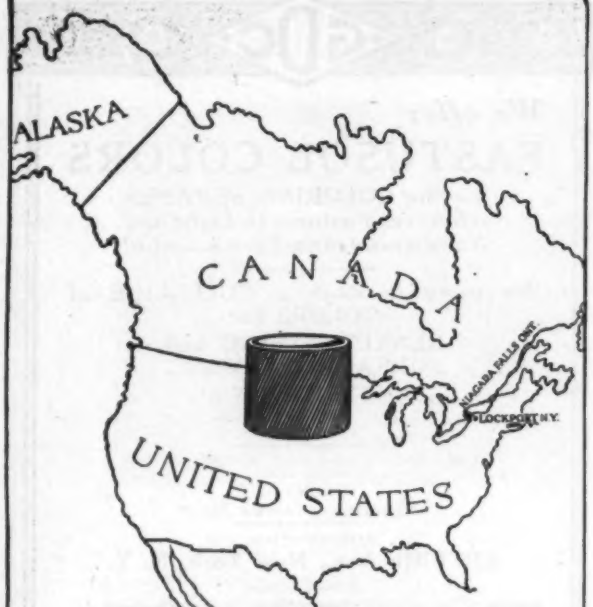

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Large Production
Ample Reserves
Prompt Deliveries
Purity 99½%

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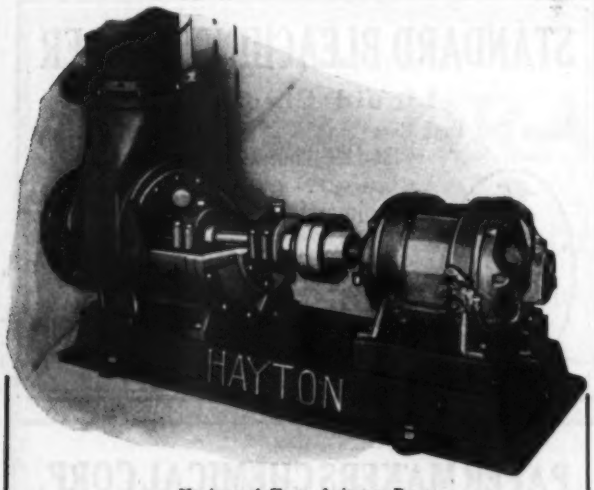

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AGITATOR PUMPS

The number of repeat orders for agitator pumps, which we have received during the past few months, is the best indication of the satisfactory service these agitators are giving.

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Cut your cost of Production
Improve your Quality
Increase your Profits
by
The use of Efficient Equipment
for

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2. Acidmaking
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200 Fifth Ave., New York City

Sole Representatives
For: Paper Machinery, Ltd.
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pulp, and demand keeps up in a way that is easily absorbing about all the supply reaching the market. In fact, transient buyers in some instances are said to be experiencing trouble locating all the groundwood wanted, since most grinders are sold up and are diverting very little supply to the outside market while having their hands full filling the wants of regular and contract customers. Statistically, groundwood is in a strong position, unmistakably. For example, latest issued figures show that at the end of November producing mill stocks in the United States totaled only 45,947 net tons, which was the lowest point to which stocks have sunk in a long while, and compared with 57,695 tons held at the end of October last. This further decline in mill holdings occurred despite a fairly high output of 79,408 tons during November, contrasted with 79,900 tons in October. Producing mills used 87,198 tons in November, or 7,000 tons more than they manufactured in that month, and shipped out 3,958 tons.

Grinders in Canada are reported procuring $32 and $33 per ton for prime groundwood for spot shipment, f.o.b. pulp mills. So little domestic groundwood is on offer that prices are mainly nominal at about $33 a ton at shipping points. Scandinavian groundwood is quoted at $35 per net ton for dry and $32 for moist ex dock New York and other American Atlantic ports.

Chemical Pulp

There is not much new trade activity developing in chemical wood pulp, since paper manufacturers are now buying on a very reserved scale while apparently having their needs taken care of for a time, and while waiting until they have acquired a better idea of what their forward requirements are likely to amount to, but there is a steady movement against contracts and back orders, and most domestic pulp mills are said to be operating on a fairly large scale and to be disposing of their output, or the greater part of it, without difficulty.

Prices are more or less stationary, and are displaying no change of consequence from day to day or week to week. Market levels are slightly below where they were several months ago, but prices appear to have settled on stable levels and promise to remain about where they are until at least the winter is over. Domestic bleached sulphite is quoted from 3.40 cents a pound upwards at pulp mills, depending on quality, and unbleached sulphite is about 2.50 cents for newsprint grade, and 2.75 to 3 cents for higher qualities. Bleached soda pulp is quoted on a basis of around 3.50 cents delivered paper mills.

Quotations f.o.b. pulp mills are as follows:

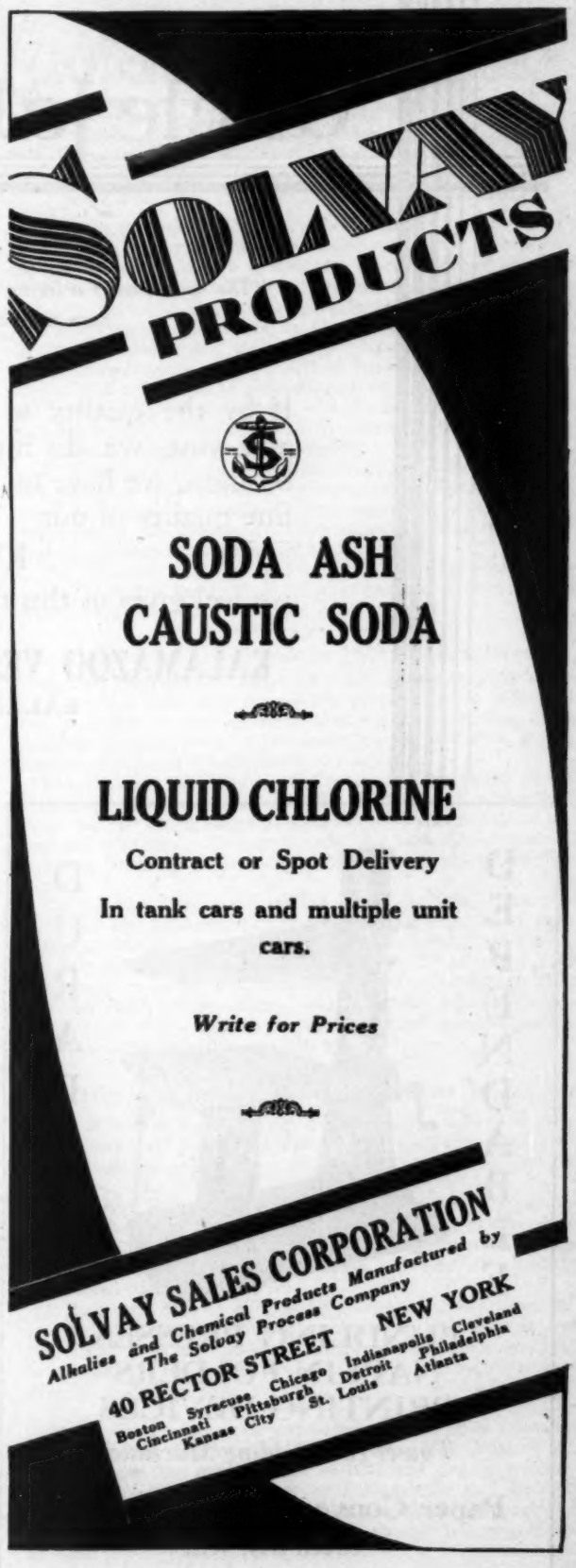
Bleached sulphite	3.40–4.75
Easy bleaching sulphite	2.65–2.90
Unbleached sulphite, No. 1 strong (news grade)	2.50–2.75
Unbleached sulphite, No. 1 book	2.75–3.00
Soda pulp, bleached (delivered)	3.35–3.60
Mitscherlich, unbleached	3.00–3.25
Kraft, No. 1	2.60–2.85
Screenings, refined	1.60–1.85

Chemicals

Papermaking chemicals are moving well on contracts, and quoted rates show little change. Casein is on a price level of around 15 cents a pound for domestic, and the imported product is quoted from 14.50 to 15.50 cents. Caustic soda is 2.90 to 3 cents per pound for solid caustic, f.o.b. works, and soda ash prices are stationary at 1.32½ cents a pound at works.

Average quotations are as follows:

Alum, lump ammonia	3.50 – 3.75
Alum, lump starch	3.75 – 4.00
Blanc fixe, powdered	3.75 – 4.00
Bleaching powder	2.00 – 2.35
Brimstone (long ton, at mine)	18.00 –20.00
Casein (duty paid)	14.50 –15.50
Caustic soda, spot delivery	2.90 – 3.00
China clay, domestic washed	8.00 –13.00
China clay, foreign	15.00 –21.00
Rosin, Grade E	8.40 – 8.50



Uncle Jake Says—

"The world owes a living only to the man who earns it, hence a lot of people are getting head over heels in debt."

If by the quality of our product and the service we give you, we do not earn the right to ask for your business, we have no right to expect it. The unusual fine quality of our

KVP PAPERS

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Towel Interfolding Machines

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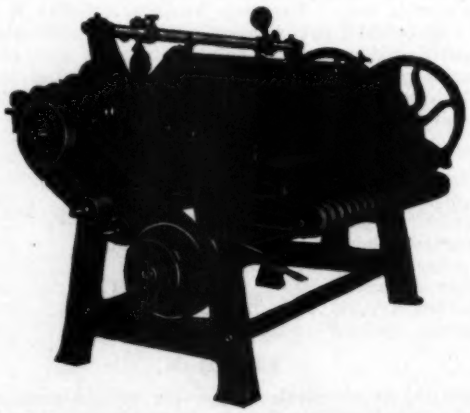

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Single—Duplex—Diagonal

CUTTER KNIVES
PATENT TOP SLITTERS

HAMBLET MACHINE CO.
LAWRENCE, MASS.

New Papers

Writing—	
White rag	15–40
White sulphite	9–30
Colored rag	15–40
Colored sulphite	8–30
Ledger—	
White rag	16–40
White sulphite	10–30
Colored sulphite	10–30
Colored rag	15–40
Bond—	
White rag	16–40
White sulphite	8–30
Colored sulphite	8–30
Colored rag	15–40
Book—	
No. 1 S. & S. C.	5.75– 8.00
Machine finished	5.50– 8.00
English finish	5.50– 8.00
Coated and enameled	7.50–12.00
Lithograph, M. F.	7.50–12.00
Newsprint—	
Rolls, contract, per ton, delivered New York	62.00–
Rolls, transient, per ton, delivered New York	62.00–
Sheets, per ton, delivered New York	67.00–
Side runs, per ton, delivered New York	47.00–52.00
Cover stock—	
Coated, both sides	–10.25
Coated, one side	–10.15
Tissue—	
No. 1 white, 20x30	.75– .90
No. 2 white, 24x36	.75– .90
No. 1 Manila, 24x36	.75– .80
Kraft	.95–1.10
Wrapping—	
No. 1 kraft	6.00–6.50
No. 2 kraft	5.00–5.50
Southern kraft	4.75–5.50
Boards—	**New York and Chicago**
Solid news	40.00–45.00
Straw	50.00–55.00
Plain chip	32.50–35.00
White coated chip	50.00–55.00
Manila coated chip	45.00–50.00
Binder's board	65.00–70.00

Chemicals

(*Continued from page 2031*)

Satin white	2.00 – 2 25
Soda ash, 58 per cent light (bags)	1.32½– ....
Starch, papermakers', in bags	3.82 – ....
Talc (ton)	16.00 –18.00

Electric Machinery Mfg. Co., Minneapolis, Minn., announces a change in the address of its Pittsburgh office. The new location is at 2300 Koppers Bldg. and the telephone number is Atlantic 1142.

New Forward Step in Paper Merchandising

L. L. Brown Paper Company, Adams, Massachusetts, manufacturer of high grade ledgers, linens and bonds, has established a form of service in connection with the use of their "Certified Papers," that should enable printers, stationers, lithographers and blank book manufacturers who either use or recommend these papers, to obtain a greater measure of profitable business and increased prestige.

This new service consists of two main divisions: (1) the unqualified certifying or guaranteeing of L. L. Brown papers as to their properties and uses; and (2) advisory work among consumers and certifying of their records and stationery as to durability, permanence and quality.

As a protection against substitution, L. L. Brown papers are conspicuously identified by certificates which the company furnishes to be affixed to packages of printed matter delivered to the customer. Thus substitution is impossible and competition is put on a fair basis.

The complete story is told in an interesting booklet entitled "Certified Papers," which the manufacturer will send free on request.

Creditors Fare Worse in 1929 Bankruptcies

General creditors lost about $30,000,000 more through bankruptcies last year than during the previous fiscal year, and got back less on each dollar of their claims, according to an analysis of the Attorney General's report published in the current number of Credit Monthly magazine.

The analysis, prepared by the research department of the National Association of Credit Men, throws light particularly upon the increasing share of bankruptcy losses borne by unsecured creditors. This group, in the case of commercial failures, includes mainly manufacturers, wholesalers and jobbers.

During the fiscal year ending June 30, 1929, unsecured creditors lost $610,804,811 through bankruptcies, while their losses during the previous year were $580,950,615. During the last fiscal year they received only $5.53 of every $100 owed them by bankrupts, while during the previous year they received $6.31. The decrease from the 1928 figure amounts to 12.3 per cent. Secured creditors fared proportionately better than during the previous year.

Hinde & Dauch Acquires Virginia Plant

The Hinde & Dauch Company, Sandusky, Ohio, has concluded negotiations for the purchase of the corrugated fiber plant, facilities and business of David M. Lea & Co., Inc., of Richmond, Va.

The David M. Lea Company is 60 years old and is a pioneer in fiber packaging, being one of the oldest box producers in the entire South. It will be a valued addition to the Hinde & Dauch interests which now operate a number of plants in the United States and Canada.

It is stated that C. F. Powell, president of the David M. Lea & Co., Inc., will continue in charge as district manager for Hinde & Dauch, and the entire present personnel will be retained. The actual transfer of the business becomes effective February 1st.

James Cleary has been appointed general sales manager of Combustion Engineering Corporation, New York. Mr. Cleary joined the organization in 1921 and has served successively as district manager at Philadelphia and Detroit; assistant general sales manager and western manager with offices at Chicago. Mr. Cleary will assume his new duties at once.

J. ANDERSEN & CO.

21 East 40th Street New York City

Importers of Chemical Pulps
BLEACHED AND UNBLEACHED

Agents for Kellner Partington Paper Pulp Co., Ltd.
Sarpsborg, Norway; Forshaga, and Edsvalla, Sweden

The Pulp and Paper Trading Co.

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Dealers in Domestic Chemical and Mechanical Pulps and Paper

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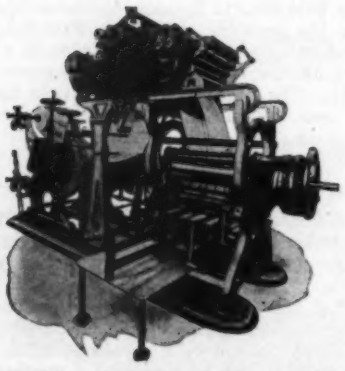
J. & J. ROGERS COMPANY, Ausable Forks, N. Y.
E. B. EDDY COMPANY, LTD., Hull, Canada
CANADIAN KRAFT LIMITED, Three Rivers, Canada
Dealers in Wayagamack Kraft Pulp
Howard Smith Paper Mills, Montreal, Quebec.
EASTERN AGENTS of Sulphite Pulp
Made by Port Huron Sulphite & Paper Co., Port Huron, Mich.

H-S MACHINE CO.



Four Color Printing Unit attached to
No. 4 Folder and Embosser

One of several designs used by Napkin Manufacturers and Converters. We design and manufacture Toilet Winders, Napkin Folders, Crepe Machines, Package Presses and Paper Specialty Equipment. Write for Catalogue.

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GREEN BAY, WISCONSIN
Chicago Office: 574 Wrigley Bldg.
Manufacturers and Designers of Special Machinery

The B.-DIC. QUALITY PULPS

"HAFSLUND BEAR"
Bleached Sulphite

"FORSHAGA"
Bleached Sulphite

"HURUM SPECIAL"
Extra Strong Kraft

"BAMBLE"
Extra Strong Kraft

Fresh Monthly Shipments—No Closed Winter Season

The Borregaard Company

Incorporated
200 FIFTH AVENUE NEW YORK, N. Y.

Bathurst Power & Paper Company, Limited

PRICE & PIERCE, LTD.

17 East 42nd Street, NEW YORK CITY

ARE NOW THE

SELLING AGENTS
for Bathurst Pulp in the United States

Unbleached Sulphite 50 tons daily
Kraft Pulp 50 tons daily

Our pulp is made from Canadian Spruce
We ship in Sheets, baled

BATHURST, NEW BRUNSWICK, CANADA

EXPORTS

Exports of paper from the United States declined in point of value in November as compared with the preceding month, according to official statistics compiled and issued by the U. S. Department of Commerce in Washington. During November, total exports of paper of all kinds from this country reached a value of $2,877,917, contrasted with exports valued at $3,230,427 in October last, and showing also a slight decrease from the export shipments of a value of $2,885,976 in November, 1928. On the other hand, exports of paper during the first eleven months of last year, totaling in value $34,233,462, registered an appreciable increase over the exportations valued at $28,235,843 in the corresponding period of 1928.

Exports of newsprint in November amounted to 1,561,611 pounds, of a declared value of $60,809, compared with 5,616,578 pounds of a value of $185,676 in the preceding month, and 2,863,269 pounds of a value of $106,066 in the similar month of 1928. The largest shipments in November last were to South America, amounting to 510,285 pounds, and to the Philippine Islands, amounting to 346,241 pounds.

Wrapping paper exports from the U. S. in November totaled 4,947,950 pounds of a value of $264,962, showing an increase over the 3,827,746 pounds, valued at $258,799, exported in the preceding month. Writing paper exports, however, declined from 2,072,782 pounds of a value of $223,521 in October to 1,785,940 pounds of a value of $186,705 in November. Book paper, uncoated, exports in November reached 2,601,085 pounds, valued at $185,703; tissue paper exports were 432,343 pounds of a value of $86,489, and sheathing and building paper exports were 1,669,942 pounds of a value of $56,535.

Export shipments of boxboard in November amounted to $53,960 in value, against $121,448 in the preceding month, while exports of other paperboard and strawboard were valued at $171,769 in November, against $194,881 in the month before.

IMPORTS

Wood Pulp

The market for imported wood pulp is generally described as quiet, with paper manufacturers mostly pursuing a waiting policy for the time being while presumably having their needs covered and while receiving fair-sized additional supplies through the arrival of shipments from primary sources abroad. However, prices of most classes of foreign pulp appear to have steadied on the slightly lower levels established toward the close of the old year, and are now exhibiting a moderately firm undertone.

A factor in this present situation, from all accounts, is that northern Europe has thus far experienced a very mild and open winter, with the result that pulp shipments from Sweden have kept up late into the season, and thereby providing larger supplies for consumers in the United States. The condition abroad is said to be so serious that pulp manufacturers are being hampered and delayed in getting their winter's supply of pulpwood out of the forests, and unless more favorable weather is seen, it is not beyond the realms of probability that pulp mills in Scandinavia may run short of wood later in the current year.

The markets abroad are firm, as regards most kinds of pulp, and more particularly strong and easy bleaching sulphite. Statistics show that mills in Sweden began the new year with more than 70 per cent of their 1929 production of sulphite sold and with slightly above 45 per cent of this year's kraft output contracted for. Producers in Norway, Finland and Germany also are fairly well sold ahead, according to advices.

Prime strong unbleached sulphite is quoted by New York pulp importers and agents at 2.70 to 2.80 cents a pound ex dock American Atlantic ports, with the low price usually named on so-called soft pulps and therefore not considered as strictly No. 1 quality. Easy bleaching sulphite of prime grade is quoted at 2.90 to 3 cents on the dock, with higher asked for some extra desirable brands. Bleached sulphite is relatively easy in price, and it is said that a prime bleached can be bought at 3.40 cents a pound ex dock New York and perhaps at a shade under this price. Standard prime Swedish kraft pulp is quoted in most cases at 2.40 cents ex dock New York, although it is reported purchases can be effected in some quarters at 2.35 cents.

The tonnage of importations of chemical pulp into the United States in November showed a decline as compared with imports in the preceding month, a total of 128,730 long tons of chemical, valued at $7,190,981, being imported in November, against 130,248 tons of a declared value of $7,478,171 in the preceding month, and as contrasted with 113,360 tons of a value of $6,728,635 imported in November, 1928, according to U. S. Department of Commerce figures. The November imports brought the total for the first eleven months of last year up to 1,324,128 long tons, giving a monthly average of 120,375 tons, and registering a big increase over the monthly average of 108,942 tons imported in the corresponding period of 1928. Groundwood imports in November amounted to 18,949 long tons, valued at $524,108, compared with 24,125 tons of a value of $584,657 in the preceding month, and making a total for the first eleven months of 1929 of 211,853 tons, against 198,239 tons in the similar time of 1928.

Current market quotations ex dock New York, and receipts at the port of New York during January, 1930, follow:

Bleached sulphite, No. 1	3.35– 4.25
Unbleached sulphite, strong No. 1	2.70– 2.80
Unbleached sulphite, No. 2	2.50– 2.70
Easy bleaching sulphite	2.90– 3.15
Mitscherlich unbleached, genuine	3.00– 3.25
Mitscherlich unbleached, ordinary	2.75– 3.00
Kraft, standard Swedish	2.35– 2.50
Groundwood, per ton (dry)	35.00–36.00

J. Andersen & Co., 500 bls. from Stugsund, 3,750 Hernosand, 500 Soderhamn, 1,200 Svartvik, 275 Hamburg, 1,000 Drammen and 3,126 Greaker; Irving Trust Co., 128 bls. from Bremen and 900 Hernosand; Bulkley, Dunton & Co., 29,250 lbs. from Hernosand, 2,000 Stugsund, 250 Wifstavarf and 7,075 Soderhamn; Castle & Overton, 4,101 bls. from Hamburg; Scandinavian Pulp Agency, 2,475 bls. from Wifstavarf, 375 Skutskar and 8,550 Sundsvall; Guaranty Trust Co., 400 bls. from Wifstavarf and 450 Sundsvall; Johaneson, Wales & Sparre, 3,075 bls. from Soraker, 7,000 Sundsvall and 500 Svartvik; M. Gottesman & Co., 2,125 bls. from Iggesund, 1,000 Svartvik and 1,000 Rotterdam; Lagerloef Trading Co., 2,265 bls. from Helsingfors, 310 Viborg and 254 Kotka; Chemical Bank & Trust Co., 631 bls. from Hamburg; Stora Kopparberg Corp., 2,275 bls. from Skutskar; Pagel, Horton & Co., 2,500 bls. from Gefle; National City Bank, 1,000 bls. from Oslo; Atterbury Bros., 3,000 bls. from Oslo; E. M. Sergeant Co., 790 bls. from Gothenburg; O. E. Kiaer, 250 bls. from Greaker; A. P. W. Paper Co., 9,812 bls. groundwood from Sheet Harbor; Order, 2,051 bls. from Hamburg, 4,200 Hernosand, 307 Kotka, 546 Tolkis and 1,230 Rauma.

Paper Stock

November imports of papermaking rags into the United States amounted to 35,473,325 pounds, of a declared value

MITTS & MERRILL SHREDDERS

Give Beaters a Lift

Conveyor or Gravity Feed Shredder

The MITTS & MERRILL SHREDDER through it's economical method of preparing stock for the beater contributes much to the completion of the beater's work in the shortest possible time, thereby cutting down operating costs and speeding up the process of paper making.

MITTS & MERRILL SHREDDERS are built in sizes with spouts ranging from 18″ to 45″ wide. We will be glad to quote you on any size adapted to your requirements.

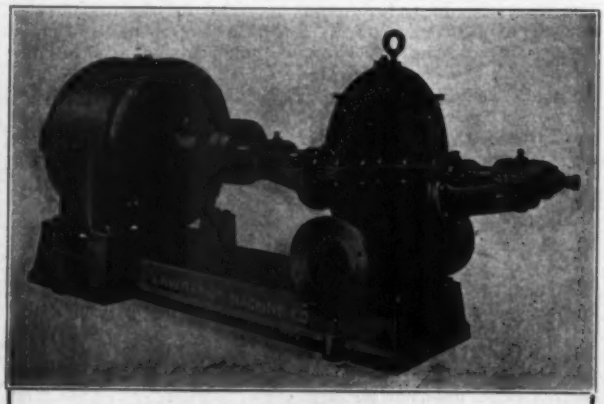
It gives the beater an economical lift.

MITTS & MERRILL

1013 Tilden Street, Saginaw, Mich.

We also build a 100% efficient "Hog" to reduce pulp mill bark and wood refuse

See pages 372 and 373 in the 1929 Paper and Pulp Mill Catalogue



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LAWRENCE MACHINE & PUMP CO.
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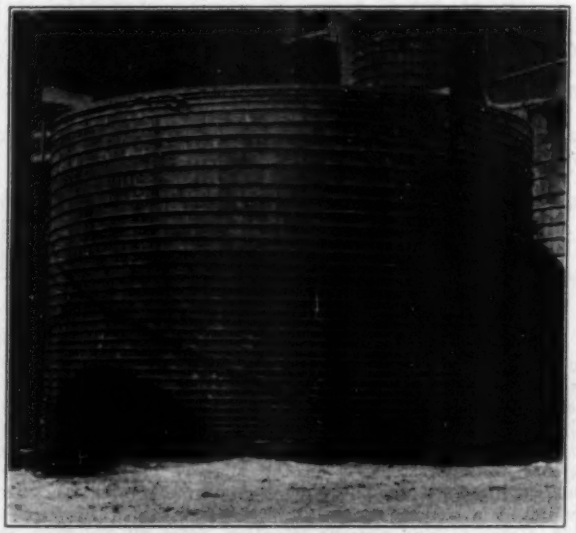
WOOD TANKS TILE



Blow Pit and Vomit Stack at Marathon Paper Company Mill.

NO TANK is too large and none too small for our tank-making equipment and stocks. We cater to the needs of the paper industry. Blow Pits, Vomit Stacks, Stock Tanks, Acid Storage Tanks, Stuff Chests, Agitators, etc. See our Condensed Catalog in Paper and Pulp Mill Catalog. Ask us about our Glazed Tile Tanks.

Tank Builders Since 1867

KALAMAZOO TANK AND SILO CO.
KALAMAZOO, MICHIGAN

of $754,834, showing a decline from the 42,341,319 pounds of a value of $986,095 imported in the preceding month, according to U. S. Department of Commerce official statistics. Imports during the first eleven months of last year totaled 405,252,432 pounds, compared with 407,140,353 pounds in the similar period of 1928, while imports of waste bagging and waste paper in the same time were 132,600,037 pounds, contrasted with 136,824,384 pounds in 1928, and imports of old rope and miscellaneous paper stock amounted to 116,686,819 pounds in the first eleven months of 1929, against 62,117,597 pounds in the corresponding period of 1928.

Arrivals of papermaking materials during January were only moderate in volume, judging from receipts through the port of New York. Imports of all kinds of paper stock excepting wood pulp at New York last month, these data being taken from manifests of steamers reaching that port during the month, were as follows:

Old Rope—Brown Bros. & Co., 990 coils and 452 bls.; International Purchasing Co., 247 coils and 562 bls.; International Germanic Trust Co., 106 bls.; United Fruit Co., 4 bls.; Guaranty Trust Co., 41 coils; I. C. Van Itallie & Co., 45 bls.; William Steck & Co., 143 coils; Harry Miller, 34 bls.; Irving Trust Co., 63 coils; Order, 61 coils and 46 bls.

Old Bagging—Robert Blank, 53 bls.; International Purchasing Co., 61 bls.; Irving Trust Co., 93 bls.; Banca Commerciale Italiana Trust Co., 546 bls.; Bank of New York & Trust Co., 66 bls.; Darmstadt, Scott & Courtney, 76 bls.; Castle & Overton, 225 bls.; Van Oppen & Co., 529 bls.; W. Schall & Co., 183 bls.; International Germanic Trust Co., 346 bls.; E. J. Keller Co., 63 bls.; Order, 375 bls.

Rags—Castle & Overton, 507 bls.; Atlas Waste Mfg. Co., 60 bls.; Paul Berlowitz, 72 bls.; Victor Galaup, Inc., 348 bls.; J. Reiss & Co., 12 bls.; Alexander H. Searle, Inc., 175 bls.; J. Cohen & Sons, 189 bls.; Darmstadt, Scott & Courtney, 69 bls.; Katzenstein & Keene, 770 bls.; S. Birkenstein & Sons, 517 bls.; Ernst Mayer, 61 bls.; Robert Blank, 194 bls.; George W. Millar & Co., 274 bls.; American Rag Trading Co., 60 bls.; Fritz Stern, 301 bls.; Albany Fibre Co., 138 bls.; N. Schwab & Son, 50 bls.; Reitman, Pilcer & Co., 190 bls.; Forte Dupee Sawyer & Co., 78 bls.; William Steck & Co., 56 bls.; Kelly & Co., 10 bls.; Daniel I. Murphy, Inc., 10 bls.; E. J. Keller Co., 220 bls.; American Express Co., 17 bls.; Porto Rican Express Co., 5 bls.; Hibernia Trust Co., 57 bls.; Bank of New York & Trust Co., 369 bls.; Guaranty Trust Co., 71 bls.; Fidelity Trust Co., 514 bls.; Bank of the Manhattan Co., 12 bls.; International Germanic Trust Co., 642 bls.; Equitable Trust Co., 1,083 bls.; New York Trust Co., 481 bls.; Irving Trust Co., 439 bls.; Chemical Bank & Trust Co., 129 bls.; Chartered Bank of India, 20 bls.; Banca Commerciale Italiana Trust Co., 381 bls.; Manufacturers Trust Co., 438 bls.; Merchants National Bank of Boston, 17 bls.; Tradesmen's National Bank, 159 bls.; Chase National Bank, 120 bls.; J. A. Manning Paper Co., 41 bls.; American Merchant Lines, 112 bls.; The Barrett Co., 77 bls.; A. W. Fenton, Inc., 595 bls.; Milton Snedeker Corp., 25 bls.; L. W. & P. Armstrong, 21 bls.; C. R. Spence & Co., 53 bls; Brown Bros. & Co., 30 bls.; American Overocean Corp., 20 bls.; Amtorg Trading Co., 152 bls.; Gallagher & Ascher, 2 bls.; Baring Bros. & Co., 53 bls.; Order, 1,074 bls.

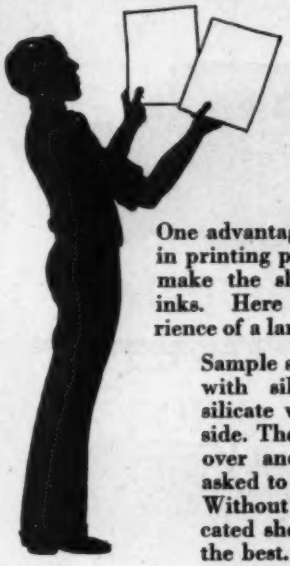
Miscellaneous Paper Stock—Darmstadt, Scott & Courtney, 162 bls.; I. C. Van Itallie & Co., 77 bls.; Victor Galaup, Inc., 48 bls.; Daniel M. Hicks, Inc., 396 bls.; George W. Millar & Co., 162 bls.; Castle & Overton, 128 bls.; Alexander H. Searle, Inc., 55 bls.; E. J. Keller Co., 234 bls.; Bank of New York & Trust Co., 81 bls.; Equitable Trust Co., 1,204 bls.; Philadelphia National Bank, 169 bls.; Chemical Bank & Trust Co., 157 bls.; Anglo-South American Trust Co., 27 bls.; International Germanic Trust Co., 215 bls.; Irving Trust Co., 78 bls.; T. D. Downing & Co., 88 bls.; Anchor Line, 57 bls.; Brown Bros. & Co., 225 bls.; C. R. Spence & Co., 95 bls.; Milton Snedeker Corp., 55 bls.; Van Oppen & Co., 28 bls.; Amtorg Trading Co., 14 bls.; Baring Bros. & Co., 243 bls.; F. J. Fawcett, 74 bls.; Order, 455 bls.

Paper

Paper imports into the United States during the month of November last were valued at $14,580,269, registering a little decrease from the importations of a value of $14,929,520 in the preceding month, but a gain over the receipts of a value of $14,146,560 in November, 1928. Total imports during the first eleven months of 1929 reached a value of $148,306,102, showing an increase over the imports valued at $141,923,710 in the same period of 1928, according to official figures issued by the U. S. Department of Commerce.

Paper imports during January, 1930, fell off somewhat as compared with the several previous months, judging from receipts at the port of New York. While official statistics are not yet available, following are the arrivals through the port of New York last month, these data being taken from manifests of steamers reaching that port during January:

Printing—Oxford University Press, 27 cs. from Liverpool; Martin & Bechtold, 27 cs. from Bremen; Perkins-Goodwin Co., 1,134 reels from Hamburg; Hoboken Trust Co., 8 cs. from Hamburg; Keuffel & Esser Co., 132 reels from Hamburg; Bank of Montreal, 15,019 rolls from Corner Brook; H. Reeve Angel & Co., 577 reels from Helsingfors; T. N. Fairbanks, 36 cs. from Genoa; E. Dietzgen & Co., 175 cs. from Rotterdam and 65 cs. Hamburg; B. F. Drakenfeld & Co., 25 cs. from Liverpool; Hudson Trading Co., 78 rolls from Sundsvall; Clinton Paper Corp., 281 tons and 399 rolls



The Printing Test

One advantage of silicate of soda in printing papers is its ability to make the sheet resistant to oil inks. Here is the recent experience of a large mill:

Sample sheets of paper made with silicate and without silicate were printed on one side. The sheets were turned over and the customer was asked to pick the best paper. Without hesitation the silicated sheets were selected as the best.

Have you a similar problem? Quartz Quality Silicate can help you.

Philadelphia Quartz Company

General Offices: 121 S. Third St., Philadelphia

Chicago Office: 205 W. Wacker Drive

RUSS GELATIN CO.

WORKS—WESTFIELD, MASS.

MANUFACTURERS OF

GELATIN and GLUE

ANIMAL SIZING GLUE STOCK

LARGEST SPECIALISTS IN AMERICA ON

FINE WRITING PAPER SIZING

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Pittsburgh Piping

MANUFACTURERS AND CONTRACTORS

WE are fully equipped to supply fabricated materials and to install complete piping systems for Electric Power Stations, Blast Furnaces, Steel Mills, Coke Works and Industrial Plants of every description—backed by an experience of more than a quarter century.

PITTSBURGH PIPING & EQUIPMENT CO.

43rd St. and A. V. R. R., Pittsburgh, Pa.

New York Chicago San Francisco Cleveland
220 Broadway Peoples Gas Bldg. Russ Bldg. Ulmer Bldg.
Houghton, Mich. Indianapolis Detroit
Dee Bldg. Traction Terminal Bldg. General Motors Bldg.
Boston, 10 High St. Dallas, Texas, Am. Ex. Bk. Bldg.
Los Angeles, Bartlett Bldg.

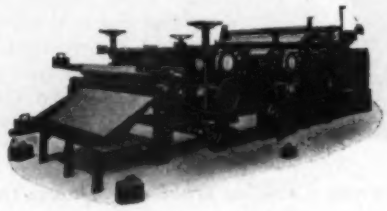
DECKERS

PULP OLD PAPERS

We offer a wide choice in vat design to suit every requirement. This machine in your pulp mill, as a multi-cylinder washer for old magazine or bleached stock, or the special design for handling mixed papers for Boxboard will meet your most exacting specifications.

Our long experience enables us to market these high grade machines at a very reasonable price.

Sizes: 30" x 48" up to 48" x 120"

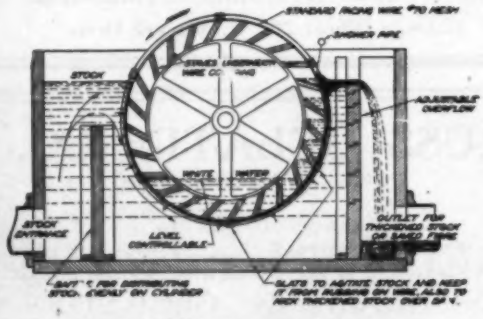


Rogers and Special Wet Machines

The standard machine for producing high density sheet pulp for direct use or for Dryer. A low cost, simple, well proven means for reducing your labor, power and upkeep. All Rolls and Cylinders equipped with roller or ball bearings.

When dry stock is not desired the Single Press will handle the same high capacity with the same labor at still lower cost.

Built in units of 50 tons capacity or less



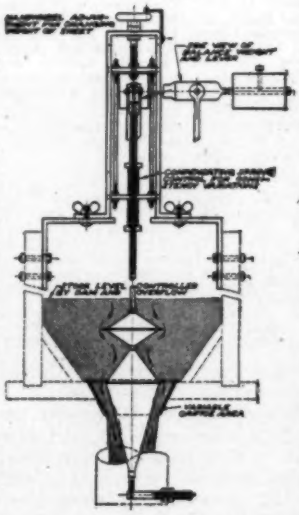
A. D. WOOD Thickener Saveall, Washer, Water Filter

The design of this popular machine is such that the cost per unit of material handled is amazingly low.

The wire does not have to drive and carry a couch roll, nor even help to discharge the thickened stock. Long life results and, with the sturdiness of the remaining parts, makes it almost automatic in operation, so seldom is any attention necessary.

Boivin Weight Regulator

Over 50% of the Boivins now operating were repeat orders.



Capable of handling any clean pulp stock in capacities above 12 tons daily, a trial of this device on our "money-back" guarantee of satisfaction will convince you that the Boivin lowers production cost and makes your customers happy. What more can you ask?

GLENS FALLS MACHINE WORKS

GLENS FALLS, NEW YORK

Waterous Ltd., Brantford, Ont. Manufacturing Agent

Mansfield, Bolton & Kent, 501 Fifth Ave., N.Y.C.
Eastern Representative

See pages 344 and 345 in the 1929 Paper and Pulp Mill Catalogue

from Liverpool, N. S.; New York Tribune, 1,073 tons and 1,906 rolls from Liverpool, N. S.; Walker-Goulard-Plehn Co., 103 bls. from Helsingfors; Journal of Commerce, 75 reels from Helsingfors and 74 reels Kotka; P. Puttmann, 6 cs. from Antwerp; Steiner Paper Corp., 84 cs. from Rotterdam, 124 reels Gothenburg and 4 cs. Bremen; Stora Kopparberg Corp., 84 reels from Gothenburg; Chase National Bank, 154 reels from Bremen; Star Co., 1,742 rolls from Liverpool, N. S.; Order, 526 reels from Oslo, 613 reels Kotka, 28 cs., 13 bls. and 761 reels Bremen, and 63 cs. Hamburg.

Wrapping—Wilkinson Bros. & Co., 346 rolls and 40 lbs. from Hamburg, and 47 bls. and 132 reels Oslo; D. S. Walton & Co., 232 rolls and 20 bls. from Gothenburg; Butler Bros., 19 rolls from St. Thomas; C. Steiner, 78 bls. from Hamburg; Massee & Co., 7 cs. from Bremen; E. Dietzgen & Co., 8 cs. from Hamburg; American Express Co., 261 cs. from Hamburg; Standard Products Corp., 37 cs. from Antwerp; Sylvania Industrial Corp., 146 cs. from Antwerp; H. Reeve Angel & Co., 7 cs. from Antwerp; J. P. Heffernan Paper Co., 102 bls. from Antwerp and 6 bls. Rotterdam; Borregaard Co., 2,214 reels and 303 bls. from Gothenburg; Cohoes Envelope Co., 87 reels from Gothenburg; Atlantic Forwarding Co., 13 cs. from Hamburg; Order, 88 rolls from Rotterdam, 85 bls. Hamburg and 3 cs. Antwerp.

Cigarette—DeMauduit Paper Corp., 842 cs. from Havre and 675 cs. St. Nazaire; Southern Pacific Co., 4 cs. from Havre; P. J. Schweitzer, Inc., 269 cs. from Marseilles and 19 cs. Havre; P. Lorillard Co., 7 cs. from Liverpool; Standard Products Corp., 763 cs. from Havre and 94 cs. Southampton; American Tobacco Co., 1,550 cs. from Bordeaux; M. Spiegel & Sons, 10 cs. from Bordeaux; Ligget & Myers Tobacco Co., 39 cs. from Bordeaux; Bank of the Manhattan Co., 20 cs. from Lisbon; J. Carasin, 5 cs. from Alicante.

Writing—Guibont Freres & Co., 30 cs. from Southampton and 3 cs. Havre; Distinctive Writing Paper Co., 14 cs. from Havre.

Filter—H. Reeve Angel & Co., 48 cs. from London, 24 cs. Liverpool and 111 cs. Southampton; C. Sleicher & Scholl Co., 14 bls. from Hamburg; E. Fougera & Co., 114 cs. from Southampton; J. Manheimer, 156 cs. from Southampton; G. Lueders & Co., 4 bls. from Bordeaux; A. Giese & Son, 38 bls. from Southampton and 20 bls. Hamburg; Lazard Freres, 2 cs. from Marseilles.

Tissue—F. B. Vandegrift & Co., 15 cs. from Liverpool; Meadows, Wye & Co., 3 cs. from Liverpool; F. C. Strype, 151 cs. from Helsingfors and 9 cs. Genoa; J. Marks, 3 cs. from Hamburg; Atlantic Forwarding Co., 12 cs. from Hamburg; W. J. Byrnes & Co., 9 cs. from Southampton, Taub, Hummel & Schnall, 8 cs. from Hamburg.

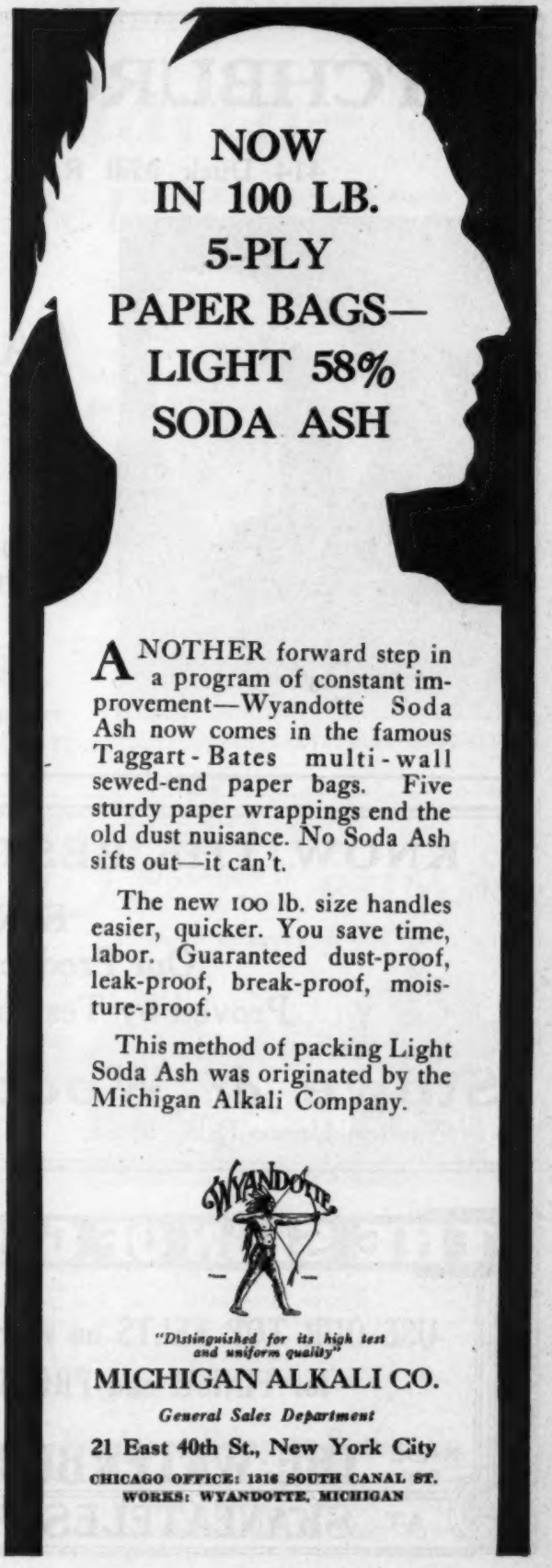
Drawing—Keuffel & Esser Co., 148 cs. and 37 reels from Hamburg and 2 cs. Southampton; Favor, Ruhl & Co., 8 cs. from Liverpool and 2 cs. Bremen; Devoe & Raynolds Co., 15 cs. from Liverpool; H. Reeve Angel & Co., 22 cs. from Liverpool and 6 cs. London.

Hanging—A. C. Dodman, Jr., Inc., 20 bls. from Liverpool, 17 bls. Hamburg and 18 bls. Southampton; F. J. Emmerich & Co., 66 bls. from Liverpool and 144 bls. Hamburg; C. A. Haynes & Co., 29 bls. from Southampton, 41 bls. Liverpool and 81 bls. London; W. H. S. Lloyd & Co., 13 cs. from London; F. A. Binder, 16 bls. from Bremen and 11 bls. Hamburg; Irving Trust Co., 134 cs. from Hamburg; Kensington Wallpaper Co., 8 bls. from Hamburg and 5 pkgs. Havre; S. Stern Stiner, 6 bls. from Hamburg; Wedemann, Godknecht & Lally, 6 bls. from Hamburg; J. E. Bernard & Co., 4 cs. from Antwerp, 2 cs. Gothenburg and 2 cs. Bremen; R. Pfingst, 4 bls. from Bremen; Order, 38 bls. from Hamburg, 4 bls. Liverpool and 9 bls. London.

Photo—Globe Shipping Co., 340 cs. from Bremen; Gevaert Co. of America, 259 cs. from Antwerp; J. J. Gavin & Co., 8 cs. from Southampton; E. Henningson, 5 cs. from Bremen; P. Puttmann, 56 cs. from Antwerp; Rectigraph Co., 75 cs. from Havre; J. H. Schroeder Banking Corp., 157 cs. from Bremen.

Board—Robert Wilson Paper Corp., 215 rolls from Rotterdam; Lowy & Lowy, Inc., 9 bls. from Gothenburg; Fibre Products Mfg. Co., 30 bls. from Gothenburg; Standard Trunk Mfg. Co., 9 bls. from Gothenburg; Lagerloef Trading Co., 101 reels from Kotka and 339 bls. Helsingfors; L. T. Piver, 11 cs. from Havre; Order, 132 bls. from Hamburg and 4 bls. Rotterdam.

Miscellaneous—S. Gilbert, 127 cs. from Bremen; Hensel, Bruckman & Lorbacher, 42 cs. from Bremen and 6 cs. Havre; A. W. Fenton, Inc., 2 bls. from Bremen; Hurley-Johnson Corp., 6 bls. from Liverpool; F. Henjes, Jr., 2 cs. from Bremen; Japan Paper Co., 13 cs. from London, 43 cs. Genoa, 21 cs. Rotterdam, 18 cs. Southampton and 4 cs. Havre; F. Murray Hill, Inc., 2 cs. from Hamburg and 4 cs. Bremen; Central Hanover Bank & Trust Co., 134 cs. from Hamburg; Fifth Avenue Bank, 7 bls. from Hamburg; Bendix Paper Co., 12 cs. from Hamburg; Keller-Dorian Paper Co., 104 cs. from Havre and 13 cs. Southampton; Pacific National Bank, 13 cs. from Hamburg; J. Henschel & Co., 15 cs. from Hamburg and 15 cs. Bremen; Whitfield Paper Works, 23 cs. from Kobe; F. C. Strype, 3 cs. from Yokohama; Manufacturers Trust Co., 30 bls. from Antwerp; Witmann & Moriarty, 5 cs. from Antwerp; G. W. Sheldon & Co., 2 cs. from Southampton and 7 cs. London; H. W. Robinson, 4 cs. from Southampton; J. E. Bernard & Co., 26 bls. from Hamburg; Maritime Inspecting & Forwarding Co., 13 cs. from Havre; Globe Shipping Co., 21 bls. from Hamburg and 8 cs. Rotterdam; American Express Co., 270 cs. from Hamburg, 225 cs. Havre and 22 cs. Rotterdam; International Forwarding Co., 12 cs. from Rotterdam, 29 cs. Antwerp and 8 cs. Hamburg; Judson Freight Forwarding Co., 14 cs. from Hamburg; Whiting-Patterson Co., 18 cs. from Southampton and 5 cs. Rotterdam; Heemsoth & Basse, 9 cs. from Bordeaux and 2 cs. Bremen; Coenca-Morrison Co., 14 cs. from Havre; J. Beckhardt & Co., 20 cs. from Havre and 14 cs. Bremen; F. L. Kraemer & Co., 2 cs. from Southampton, 16 cs. Havre and 164 bls. Gothenburg; Tice & Lynch, 3 cs. from Rotterdam, 4 cs. Southampton and 2 bls. Hamburg; Eleto Co., 4 cs. from Southampton and 10 cs. Havre; L. Schulman & Co., 4 cs. from Hamburg; C. A. Redden, 27 rolls from Southampton; P. C. Kuyper & Co., 2 bls. from Bremen; Borden & Riley Paper Co., 5 cs. from Antwerp; Tamm & Co., 2 cs. from Antwerp and 9 cs. Bremen; Milton Snedeker Corp., 24 cs. from Hamburg; Gerhard & Hey, 5 cs. from Hamburg; W. C. Sullivan, 21 cs. from Hamburg; D. C. Andrews & Co., 3 cs. from Hamburg; Bank of the United States, 17 cs. from Bremen; J. J. Shore & Co., 13 cs. from Bremen; W. Bersch, 5 cs. from Bremen; D. P. Young, 22 cs. from Bremen; C. H. Boulin, 19 cs. from Havre; P. H. Petry & Co., 2 bls. from Havre.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IN 100 LB.
5-PLY
PAPER BAGS—
LIGHT 58%
SODA ASH
ANOTHER forward step in a program of constant improvement—Wyandotte Soda Ash now comes in the famous Taggart-Bates multi-wall sewed-end paper bags. Five sturdy paper wrappings end the old dust nuisance. No Soda Ash sifts out—it can't.
The new 100 lb. size handles easier, quicker. You save time, labor. Guaranteed dust-proof, leak-proof, break-proof, moisture-proof.
This method of packing Light Soda Ash was originated by the Michigan Alkali Company.
WYANDOTTE
"Distinguished for its high test and uniform quality"
MICHIGAN ALKALI CO.
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FITCHBURG DUCK MILLS

ESTABLISHED 1844

414 Duck Mill Road, FITCHBURG, MASS.

Manufacturers of

TRIUNE and MULTIPLE PLY

CANVAS DRYER FELTS

← { OUR NEW 300-INCH LOOM WHICH IS MAKING A DRYER FELT 288 INCHES IN WIDTH }

Fine Faced "English Woven" Felts for Fine Papers in Two, Three, Four, Five and Six Ply 60 Inches to 288 Inches in Width.

ABSOLUTELY NO FELT MARKS IN PAPER

TRIUNE Three Ply Felts for extra long service and large production

KNOW THE BEST FROM THE REST

KNOW

Our Product Is the Best.

Proved by Test from Coast to Coast

Stowe & Woodward Company

Newton Upper Falls, Mass. *The Rubber Roll Makers*

THE SIGN OF GOOD FELTS

USE OUR TOP FELTS on your Board Machines for FINISH and PRODUCTION

MADE BY THE WATERBURY FELT CO.

AT SKANEATELES FALLS, N.Y.

Foreign Trade Opportunities

The following foreign trade opportunities are issued by the Bureau of Foreign and Domestic Commerce of the United States Department of Commerce. Those interested are requested to communicate with the Bureau at its offices in Washington or New York or its branch offices in other cities, in every case mentioning the number of the inquiries referred to.

No. 42833—Paper bags and envelopes, for lingerie stores. Montreal, Canada. Purchase desired.

No. 42840—Crepe and toilet paper, and paper napkins. Pernambuco, Brazil. Agency desired.

No. 42848—Paper spools and cones, for textile industry. The Hague, Netherlands. Purchase and agency desired.

No. 42813—Tissue paper, decorative crepe paper, and paper specialties. Toronto, Canada. Agency desired.

No. 42786—Aluminum sulphate. Helsingfors, Finland. Agency desired.

No. 42960—Wall and floor boards, paper. Copenhagen, Denmark. Agency desired.

No. 42956—Cardboard for shoe boxes. Singapore, Straits Settlements. Purchase desired.

No. 42961—Paper cups for soda fountains. Tegucigalpa, Honduras. Agency desired.

No. 42925—Printing, M.G. cap, white; M.G. cap, colored; newsprint, marbled, glazed, coated and enameled paper. Swatow, China. Purchase desired.

No. 42955—Wall paper in attractive colors and designs, good quality. Fusan, Chosan. Purchase desired.

No. 42901—Writing and typewriter paper. Rio de Janeiro, Brazil. Agency desired.

No. 43028—Wallboard. Quebec, Canada. Agency and purchase desired.

No. 43010—Casein. Ancon, Canal Zone. Purchase desired.

No. 43111—Insulating board. Hamburg, Germany. Agency desired.

No. 43046—Newsprint paper. Cordoba, Argentina. Purchase desired.

No. 43315—Board, insulating, plasterboard, and felt for motion picture theatres. Winnipeg, Canada. Purchase desired.

No. 43178—Paperboard and papers for box-making. Sydney, Australia. Agency and purchase desired.

No. 43289—Cellophane. Prague, Czechoslovakia. Agency desired.

No. 43179—Greaseproof or glassine paper, glazed, for window envelopes. London, England. Agency and purchase desired.

No. 43229—Overissue newspapers, large size. Kopbal, India. Agency desired.

No. 43262—Newsprint. Sydney, Australia. Purchase and agency desired.

No. 43202—Protective paper, prepared, for shoe manufacturing. Berlin, Germany. Agency desired.

No. 43270—Gummed tape. Funchal, Madeira. Agency desired.

No. 43302—Wall and insulating boards. Glasgow, Scotland. Sole agency desired.

No. 43275—Papermaking chemicals. Quebec, Canada. Purchase and agency desired.

No. 43247—Roofing felt, asphalt-coated. Johannesburg, South Africa. Agency and purchase desired.

W. H. Perry, president of the Harvey Paper Mills Co., Wellsburg, W. Va., announces the award of a contract to The Austin Co., engineers and builders, with headquarters at Cleveland, for design and construction of a new paper bag plant at Wellsburg. The new unit will be of brick and steel frame construction, one story and basement, 94 by 240 feet. The Harvey Paper Mills Co. is a subsidiary of the Pillsbury Flour Co., Minneapolis, and manufactures paper bags for the flour mill.

The Pittsburgh office of The Reliance Electric & Engineering Co., has moved to new and enlarged quarters at 2300 Koppers building. B. J. Ballard continues as district sales manager with C. V. Gregory as assistant.

Starch—

A SIMPLE change in the manufacturing process often results in a pronounced decrease in cost of production.

Paper Mills use Starch for sizing to produce better and stronger sheets with lower cost of manufacture.

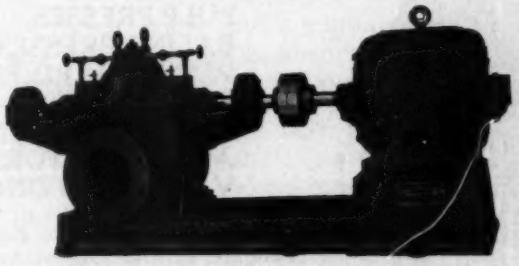
Our SPECIAL PAPER brand for beater-sizing increases strength of sheet and gives improved finish.

Our FOX HEAD brand for top-sizing is more economical than all glue-size.

CORN PRODUCTS REFINING COMPANY
17 Battery Place, New York City

LAWRENCE "VORTEX" CENTRIFUGAL PUMPS

"Built for every service"



—give utmost satisfaction in low-cost, dependable service—

In every type of service—water works, filtration plants, construction work, irrigation, dredging, sewage, etc.—you will find LAWRENCE "VORTEX" Centrifugal Pumps giving thoroughly satisfactory service. Continuous operation over long periods of time without repair cost is an outstanding feature.

Specify pumps that have proved they give that sort of dependable service.

Lawrence Pump & Engine Co.
P. O. BOX 70
LAWRENCE, MASS.
New York Office:—90 West Street

BUILT FOR HARD WORK, LONG LIFE, AND NO WORRY TO THE OWNER

ZAREMBA
EVAPORATORS

HAVE ESTABLISHED AN ENVIABLE REPUTATION

IN THE CONCENTRATION OF

SODA BLACK LIQUOR SULPHATE BLACK LIQUOR
SULPHITE WASTE LIQUOR

DUE TO
WIDE EXPERIENCE—THOROUGH ENGINEERING—PAINSTAKING CONSTRUCTION

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506 Crosby Bldg., Buffalo, N. Y.

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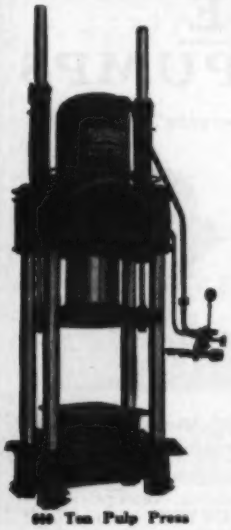
SOUTHWARK

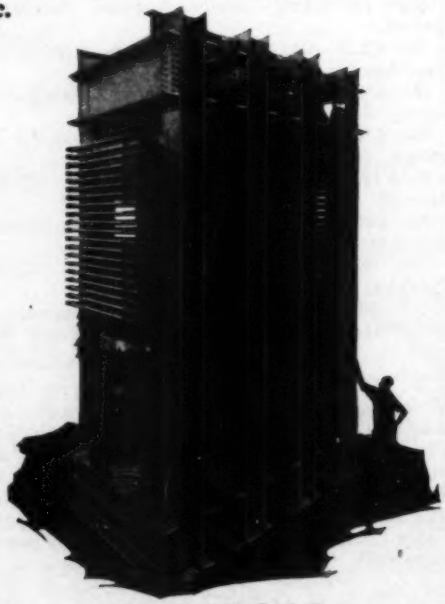
Hydraulic Equipment for Pulp and Paper Mills, Wall Board Plants, Etc.



600 Ton Pulp Press

PULP PRESSES
BALING PRESSES
WALL BOARD PRESSES
PULP TRUCKS
HYDRAULIC PUMPS
ACCUMULATORS
VALVES, FITTINGS, ETC.

Southwark Hydraulic Equipment is the choice of the largest and best known Pulp and Paper Mills throughout the country. They find Southwark products give the most efficient service under exacting conditions. Write for Bulletin No. 14.



2000-ton 12'-6"x4'-6"
20 Opening Wall Board Press

SOUTHWARK
FOUNDRY and MACHINE CO.
400 WASHINGTON AVENUE
PHILADELPHIA, PA.

343 S. DEARBORN ST.
CHICAGO

AKRON
100 E. SOUTH ST.

Cases Handled by Import Committee

In checking over the activities of the year 1929 it was surprising to the staff of the Import Committee to realize that the number of new cases handled during the year was nearly the highest in the committee history, the problems arising totaling 583, only fifteen fewer than in the busiest year in the annals of the committee.

Twenty-one importations of fancy embossed papers are before the United States Customs Court on a finding by the customs officials that the shipments were undervalued. The authorities, finding no correct home value, have levied duty on the basis of the United States value and the importers have protested this action to the court.

Kraft wrapping paper from Sweden has been held by the United States Customs Court to have been undervalued when imported at Galveston. An importation of printing paper at Galveston shipped from Sweden was similarly held to have been undervalued.

Japan Makes Progress in Papermaking

The Japanese have made remarkable strides during recent years in the manufacture of machine-made paper, according to a study of the paper trade of Japan which the Commerce Department has just issued as a trade bulletin. At the present time, the bulletin declares, Japan ranks with the leading paper-producing countries in volume of output, being surpassed only by the United States, Germany, the United Kingdom and Canada.

The manufacture of machine-made paper ranks among the most progressive and prosperous of Japanese industries, the report points out. An ample supply of working capital, together with an efficient management has in most cases insured the plants being equipped with the best modern machinery and labor saving devices; its forests provide an abundant supply of pulpwood and its numerous waterfalls make the industry independent of foreign sources of supply of basic raw materials and power.

Japanese output, however, is confined largely to printing papers, particularly newsprint, the report shows. Notwithstanding the important domestic industry, the Japanese market each year absorbs between $7,000,000 and $10,000,000 worth of imported paper and paper products. The American share in this trade has averaged somewhat less than 10 per cent annually, as against 25 to 35 per cent enjoyed by Sweden and approximately 20 per cent each by the United Kingdom and Germany. Japan is strictly a price market, it is pointed out, and the greatest demand is for the medium and cheaper varieties.

Opportunities for the Shop Genius

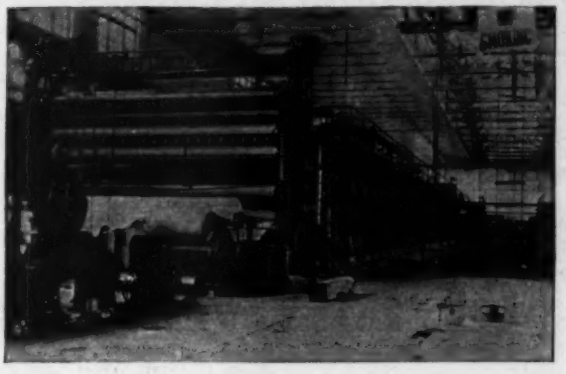
Industrialists as well as men in the shops and factories will be hereafter given public recognition for outstanding achievements in industry under a plan formulated by the officials of MacDonald Bros. Engineering Laboratories, Inc. of Massachusetts, the company formed to erect and operate the year-round permanent exposition of all kinds of industrial tools and equipment at Detroit.

Under the plan the industrialist and the man in the shop who makes the most outstanding contribution to industry each year will be awarded gold medals and substantial cash prizes by MacDonald Bros. Engineering Laboratories, Inc. of Massachusetts. A committee composed of leading American industrialists will determine the conditions of the awards.

The purpose of the plan is not only to stimulate industrialists and factory employees to greater individual achievements, but to give credit where credit is due.

H. E. MacDonald, vice president and general manager of the laboratory organization, in announcing the plan of the company said that it is about time that proper recognition be given to men in industry for their achievements. Prizes are awarded each year to the persons making the outstanding contributions to the arts and some of the sciences, but rarely does one hear about men in industry being rewarded, at least while they live, for extraordinary achievement.

The committee on awards will be appointed this year before the completion of the laboratory building in Detroit.



Thoroughly cleaned felts stay clean longer

UNLESS every trace of dirt, sizing, and other foreign matter comes out in the washing of your felts, they will quickly become dirty again. Frequent, costly shut-downs will be necessary. Unnecessary wear and tear on felts will result.

Oakite will speed the washing and rinsing of your felts and assure a thorough job. This effective material cleans safely; removes every particle of dirt without harming the fibres in any way.

It rinses easily and completely. Felts are left soft and as absorbent as new; remain in service for longer periods.

Our nearby Service Man can give you complete information on the way in which Oakite is saving time and reducing felt replacement costs in other mills.

Write us and ask to have him call. No obligation of course.

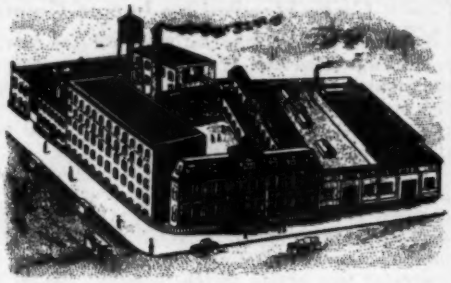
Oakite Service Men, cleaning specialists, are located in the leading industrial centers of U. S. and Canada

Manufactured only by
OAKITE PRODUCTS, INC., 16A Thames St., NEW YORK, N.Y.

OAKITE

TRADE MARK REG. U.S. PAT. OFF.

Industrial Cleaning Materials and Methods



80 YEARS OF KNOWING HOW

Not just a *good* reputation, but a reputation for *progress*—not because we were founded in 1848, but because we have been in the *same business* since then—not because we have made Fourdrinier Wire for a *long time, but* because we make the *best you can buy today*—that's what counts! *What are you buying today!*

Cabble Wire is conceded throughout the length and breadth of the Paper Industry to be Superior, because during our 80 years of progress, we have consistently bent every effort towards the originating and developing of improvements in wire making methods that have proved definite contributions to the industry as a whole.

80 YEARS OF KNOWING HOW!

THE WILLIAM CABBLE EXCELSIOR WIRE MFG., CO. INC.
74-88 AINSLIE STREET . . . . . BROOKLYN, N. Y.

FARREL

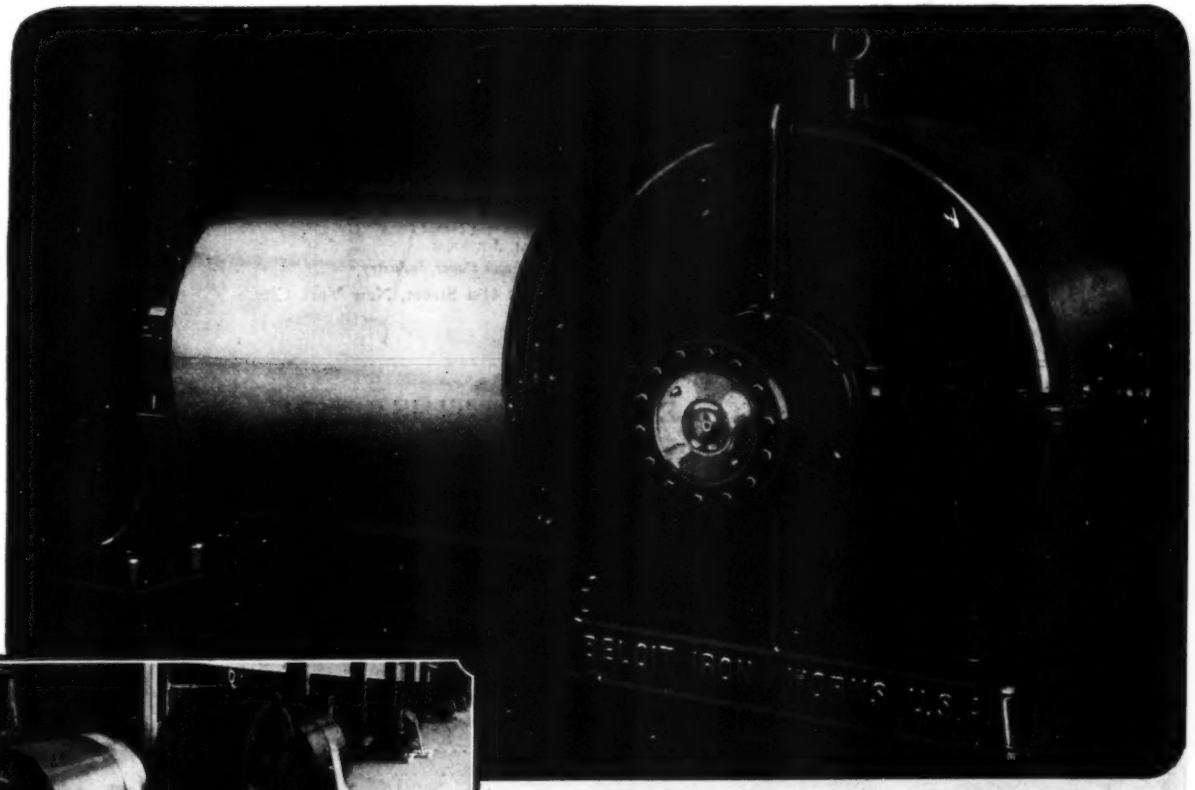
FARREL INDICATING ROLL CALIPER

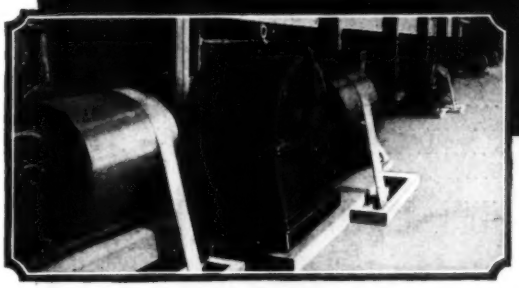
A precision instrument, of very light weight, with which rolls can be calipered to the end of the face without reversing the instrument. Only two adjustments are necessary in changing from one diameter roll to another. Moves freely along the face of the roll and shows the slightest variation in the diameter at any point.

FARREL ROLLS are made in all sizes up to and including **298″** face.

FARREL-BIRMINGHAM COMPANY INC.
ANSONIA, CONN.

Successor to
Farrel Foundry & Machine Co., Ansonia, Conn., Est. 1848
Birmingham Iron Foundry, Derby, Conn., Est. 1836





The Modern Spiral Bevel Gear Drive

A Smooth, Simple Drive for Changing Speeds, Weights and Draws

THERE is a demand on the part of the papermaker today for a simple drive, adapted to high speeds, where he changes speeds and weights, which in turn changes his draws and helps him to prevent weakening his paper by undue stretch.

This problem has been met by us with a special drive of spiral gears which are encased in a bath of oil. The teeth of the gears are hardened, all rotating parts are supported in anti-friction bearings, everything is quiet. Equipped with a high-speed clutch similar in many respects to the high-speed clutch on your automobile. It is altogether noiseless. There is no place for the oiler or the cleaner, as everything is concealed, and everything runs in a bath of oil. The clutch is operated by hydraulic pressure. A valve on the front of the machine throws it in or out. The belt shifter is operated by a motor from the front of the machine, thus the machine tender can stand with his finger on the button, judging the tension and quietly moving the belt a little slower or a little faster as his judgment may determine These drive units are also furnished with magnetic clutches.

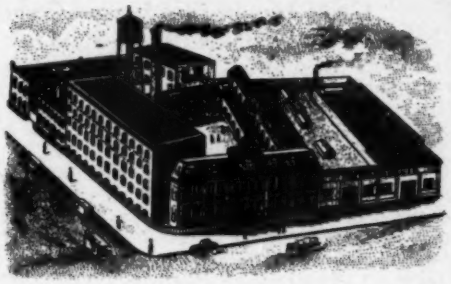
The large number of recent installations proves the popularity of this type of drive. Write for the facts.

The *Beloit* Way is the *Modern* Way

BELOIT IRON WORKS, BELOIT, WIS., U. S. A.

The BELOIT

BELOIT IRON WORKS PAPER MACH'Y BELOIT WIS



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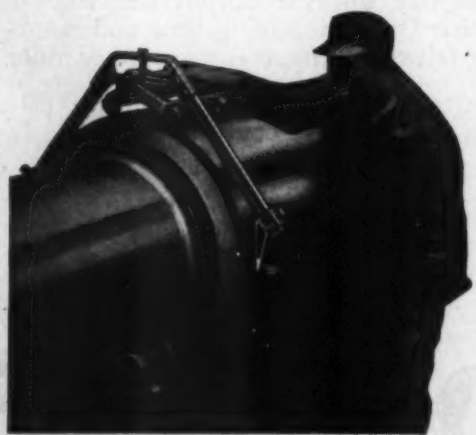

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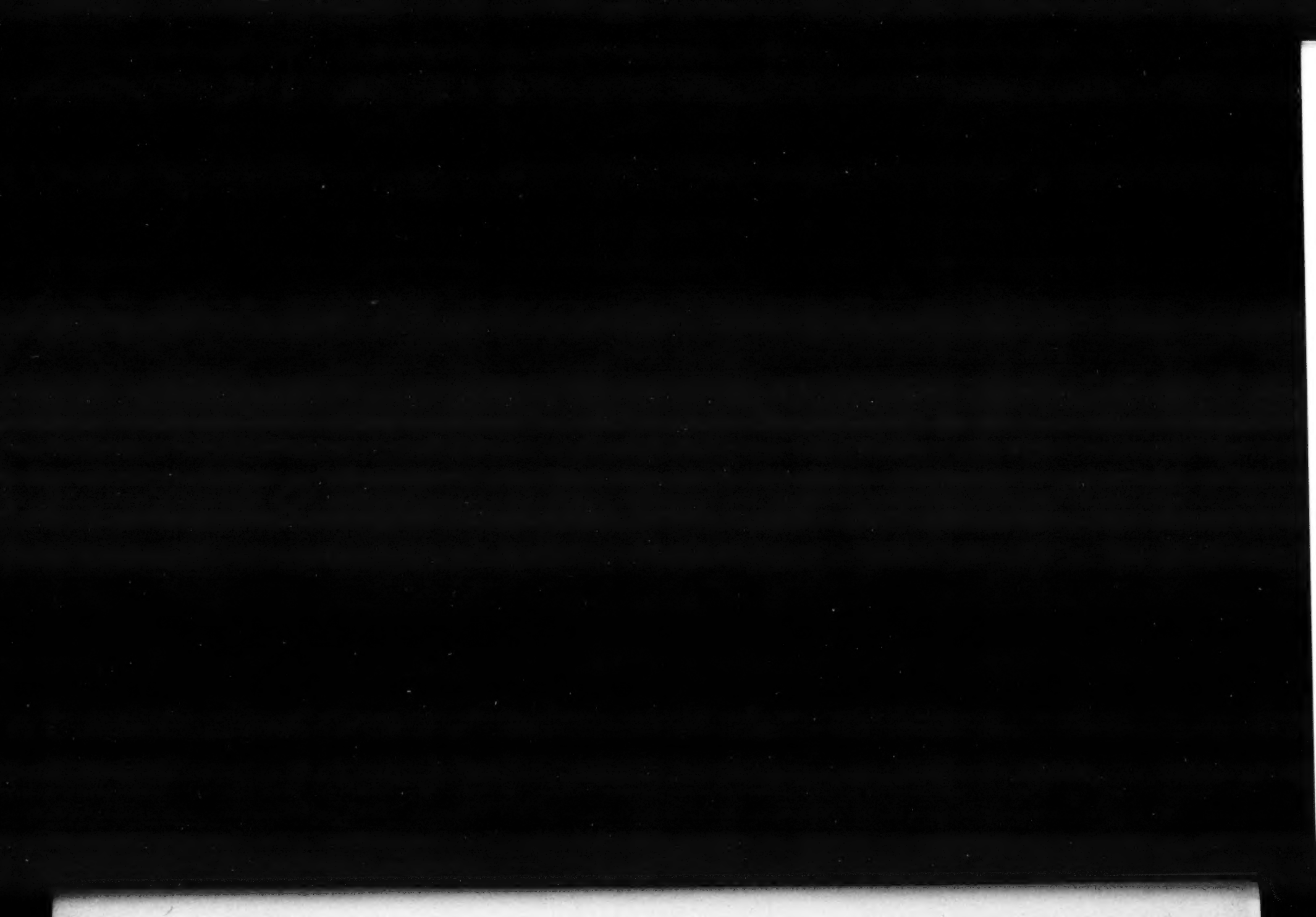
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